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THIS WEEK'S NEWS

PAGE

MR. HUGH ROBERTS, F.R.I.B.A., has spoken of the contribution which the conversion of terrace houses can make towards meeting the need for middle-class accommodation. 645

NEW central offices for the Ministry of National Insurance, designed by Mr. Neville Hinwood, M.M., A.R.I.B.A., of the Chief Architect's Division of the Ministry of Works, occupy a site of 64 acres at Benton, Newcastle-upon-Tyne. 649

NEW flats in the Abbott-road area of Poplar are being built on unconventional lines. Research to find an alternative to brick resulted in the development of a structural form and fabric that also dispenses with scaffolding and reduces temporary framework to a minimum. 652

THE suggestion that a country school should be established as part of the Architectural Association School of Architecture so that students would have the advantage of living in and studying the social and building conditions of rural areas has been made by Mr. Gordon Brown, A.R.I.B.A. 657

THE L.C.C. plans to build 34 County Colleges in various parts of London, at a total cost of £14 millions. Each will be of 500 places. 658

SITE COSTING FOR BUILDERS

IT is everywhere accepted that if there is one paramount factor that can operate to reduce the cost of building in these times it is increased output per man per day—not finishing at per day, but continuing per week, month and year until the measure of it is no longer regarded as *improved* output but accepted as *normal* output. The October, 1947, Agreement, which at last gave official recognition in the building industry to the system of bonus on output, did not collaterally give any specific lead on methods of bonus assessment. In this regard there had been something of a hangover from the war-time system that achieved a certain notoriety under the initials P.B.R. It was rightly accepted that a considerable divergence of method of bonus assessment must be allowed as between the large and small firms and as between one type of building contract and another. No attempt was made to lay down any specific method of bonusing, and although several systems have since been put forward (some in this paper) designed to cater for particular requirements, the teething troubles cannot, in general, be said to have been successfully overcome.

Comparatively few firms in the "small contractor" category of ten to one hundred operatives have yet, it is thought, got down to a scientific method of site costing, and many of those that have instituted a bonus-on-output scheme rely mainly on rule of thumb methods or on a system that can only answer to that designation in so far as trial and error lead to amendment and correction. It is these firms that the newly-published Ministry of Works booklet* is intended to influence. The methods explained and illustrated in the booklet are those used by the Ministry in connection with its mobile labour force, and therefore it may be accepted that they have been proved in practice, at least within the limitations of the work on which the mobile force operates.

The system, if developed to its full extent, is intended to embrace and co-relate several desirable features—the recording of current site labour and mechanical plant costs; the extension of this as a basis for bonusing thereby improving output and reducing unit costs; and the comparison between actual and estimated costs, directed to assisting future tendering. The system can be adapted to various settings for incentive targets, with the record of corresponding output achieved brought forward for periodic reconciliation, whilst simultaneously it can indicate a measure between progress achieved and the programme set. Simplicity of entry has been kept in mind, and there is much to be said for the method here adopted of using uniform hourly rates in the costing allocations and recording all "plus rates," overtime, and so forth as extras which are brought to cost in periodic collection, and apportioned by percentages added back to the flat rate totals.

The full set of record sheets appears to be six (of which the booklet depicts four). There may be a little doubt whether such an extensive dossier would commend itself to the small man, since to develop the system to the full would require also the use by the builder of the multi-columned Standard Wages Sheet. The system appears to be well considered in its application to simple works of a repetitive nature, but there will be some speculation as to how soon it might fall down under the complexities of non-standardised work. Of the illustrations given, Nos. 1 and 2 are simple ones showing the daily allocation and weekly analysis of certain bricklaying operations. One would like to see illustrated some of the more complex features of, say, Carpenter or Plumber.

The main criticisms that can be directed against this booklet are attributable, it may be, to the meagre paper allocation that it has received. The average builder and his staff, as the booklet reminds us, have little time to spare, and that time would be given with greater purpose to a more incisive exposition than these few pages can be expected to put across. It is true that the booklet is advanced to attract initial interest, which the Ministry of Works is backing up with an Advisory Service offering free advice to builders who are willing to try out the scheme, or in formulating other schemes to suit contractors' particular requirements. Nevertheless, there should have been no opening left for criticism on technical issues in a booklet containing only ten pages between the covers. Such criticism must be directed, for example, to the opening pages which illustrate three schedules indicative of the sequence whereby the items in a bill of quantities are allocated first into kindred groups for bonusing, etc., and then into larger "target" groupings appropriate to repetitive works. In the first schedule illustrated, purporting to be typical items from a bill of quantities prepared under the Short Code of Measurement, the descriptions are curiously slipshod, and are not, as they stand, typical of the Short Code. No width is given to HORIZONTAL D.P.C. SLATE IN FEET RUN, whilst a thickness is needlessly given to HALF BRICK WALLING 4½ IN. IN FT. SUP. Again, if the item FORM BANDCOURSE 3 IN. IN FT. RUN is, as its position indicates, in the rough brickwork, it would not be measured in the Short Code. If, however, it is in facings, why is it not grouped with the facings? Another curiosity is that a separate costed operation (numbered B.3) is suggested for EXTRA FOR FACINGS 4½ IN. AND 11 IN. WORK. It is not explained how such an item could be costed distinct from the walls to which it applies (since part of such an "extra" derives from the higher labour factor in laying the bricks as distinct from the extra cost of pointing, etc.) It is noticeable that no entries under the group operation No. B.3 appear in the Allocation Sheets illustrated in the latter part of the booklet.

Bonusing and site costing cannot become popular without standardised schemes and such are bound to arrive in due course. Here is one offering; another is to be expected shortly from the Employers' National Federation, which has announced that it intends to sponsor model schemes for the guidance of the small contractor, based on the experience of those who already have a system working satisfactorily. The difficulties and com-

* SITE COSTING FOR BUILDERS. H.M.S.O., price 3d. net.

plexities of bonusing for building operations are self-apparent, but can easily be overstated. A few only are insuperable. Much prejudice can be overcome by clarity of exposition accompanied by a real desire to co-operate by both operative and employer. One has only to listen to the expertise of the average working man among his fellows "at the local" in connection with pools coupon calculations to realise that where the interest is strong enough there is a quick appreciation and ability to grasp the intricacies of figures which to all appearances would be judged far above primary school standards.

L.C.C. REDEVELOPMENT IN SOUTH-WEST

A SCHEME for the redevelopment, as a housing estate, of 14 more or less adjacent sites in south-west suburban London, having a total area of more than 300 acres—the largest scheme of its kind so far undertaken by the L.C.C.—was considered at a meeting of the Council on Tuesday this week. All the sites—some large, some small—are in the neighbourhood of Richmond Park, Putney Heath and Wimbledon Common. Putney Heath at its north-east corner has something of the shape of a giant arrow-head, and it is along the upper and lower sides of this, in varying widths and depths, that the proposed redevelopment is to take place—in the one direction towards Richmond Park and in the other towards Wimbledon. A large model of the scheme is now at County Hall, and a reproduction of a photograph of this is given below. Elsewhere in this issue are the available particulars of the proposals. Most of the sites are at present occupied by large old houses dating from Victorian and earlier times, many having been damaged by bombs. Others which are intact are unoccupied and look derelict. At least two fine Georgian houses are included —Downshire House and Mount Clare—and these are to be preserved. In this large, straggling and rather angular area the L.C.C. proposes a mixed development of houses and flats for a population of about 21,000, all income groups, together with all necessary buildings for community life.

It is clearly difficult, perhaps impossible, to redevelop with complete unity a large, irregular area such as this, contained as it is within a long-established meshwork of roads and including much development, mainly good-class houses and flats, which must be retained. Whether, however, full advantage has been taken of any opportunities for a more organic type of plan it is difficult to judge from the model. The general impression received is that the sites are just filled up, conveniently, no doubt, but without creating an appearance of unity. The layout is said to be tentative.

We would suggest to the L.C.C., with all respect, that this model, large as it is, does not allow a proper judgment of the layout as a whole. If it is possible to do so, we should like the L.C.C. to issue a black-and-white scale plan of the whole area showing development to be retained black, and proposed redevelopment hatched, with a key to the various types of building. Without this it is impossible to judge the merits of the scheme, particularly from the point of view of town planning. We trust it may not be too late to consider revisions that may be suggested by competent independent judgment, for it is essential to the credit of London that a great and novel scheme like this should be a model of its kind.

As there has been some misunderstanding in the matter, it should be made clear that this scheme does not involve building on any public open space. Nor is any of it actually in Wimbledon, which is an independent borough outside the L.C.C. area.

SOUTH

Proposals for housing development in areas fringing Wimbledon Common and Putney Heath came before the London County Council on Tuesday. A model of the area showing proposed housing sites (outlined) is illustrated above. *(See facing page.)*

NOTES AND NEWS

Competitions and Entrants.

WHAT is happening to our competition system? A reader informs us that he has recently applied for two separate sets of conditions and was informed that he was too late to enter. The first instance was the housing scheme at Lambeth, where his application (made only a few weeks after the first announcement) was refused. Pursuing the matter further, he called up the organisers on the telephone and was told pretty summarily that the short date was fixed because architects were well known to be vague about time (surely a heresy!). A short while after, our correspondent (nothing if not a trier) decided to enter for the school competition at Worcester. Again failure awaited him, this time on the score that too many entries had already been received. For the moment our correspondent has retired from the competition field a somewhat broken man.

Various points would appear to stand out from this little saga of frustration. First is the undoubted popularity of the competition system; possibly because of economic reasons, architectural competitions have never been so popular as they are to-day. Second is the crying need for more competitions. It has always surprised us that, in an interim period such as we are presumably still passing through, the field of competition work is not much larger. Recently much concern was expressed by the Government at a possible future shortage of architects. At the moment there is no such shortage, merely shortage of work. Competitions can provide interest and not a little excitement in these far from rampant days. As to the imposing of a restriction regarding applications, it would seem fair enough in itself if definite and clear instructions are given at the outset as to when that date will occur, but naturally a reasonable space of time should be given to allow for the less definite people to make up their minds! The fact that so many applications for the Worcester competition were received in so short a time signifies that the competition system is likely to pay good dividends to promoters.

"Auberge."

ALL who heard Mr. H. S. Goodhart-Rendel's recent B.B.C. talk on the French *auberge* must have been charmed with his clever word-painting of such an integral part of the French scene. Our English equivalent, the small country hotel, seems rather to pale beside such a colourful counterpart, for colourful the average French *auberge* certainly is, perhaps more so to the foreigner than to the Frenchman. Architecturally the *auberges* of France are nothing if not various, with no particular *motifs* which usually mark the English "pub." or small hotel. It is in their internal atmosphere that most *auberges* are so redolent of the French way of life. The value of progress is admitted, but it would be a dark time indeed if such unique expressions of a country's culture were to pass from the living scene.

A New Architectural Education.

MOST architects have their theories about architectural education, but few manage to make so bold and practical an approach to the subject as did Mr. Gordon Brown at the Architectural Association on November 24. His was a talk bubbling with the ideas of a man with enthusiasm for his job, but those ideas were never divorced from the somewhat grim circumstances of reality. Thus, while advocating a country school to be shared by architectural and Royal College of Art students to further their cultural development, Mr. Brown matter-of-factly asked, "But who will pay for it?" He showed how an architectural student might quite easily, under existing conditions, spend 11 years in training before being fully qualified to take his place in the profession. "Where are the parents who can afford that?" Mr. Brown wanted to know, and it didn't seem to matter much if the period need be only nine years, as some speakers afterwards suggested.

The discussion did show, however, that some were still in doubt as to precisely where the architect's job began and ended. True, one of the speakers attempted to draw a red herring or two across Mr. Brown's path with some remarks on "spatial relationships" and the "emotional impact of plans and buildings," but this was essentially a practical evening and nobody wanted to play with mere words. In fact, it was Mr. R. Furneaux Jordan who had the meeting wholeheartedly behind him when he expressed the strong hope that action would be taken to implement Mr. Brown's suggestions.

Bath's Georgian Buildings.

MR. HUGH ROBERTS, F.R.I.B.A., reading a paper on "The Conversion of Terrace Houses" before a recent meeting of the London Society, said: A conference has recently been held in Bath on the use of the Georgian buildings, under the auspices of the Georgian Group. At this conference the question of conversion in all its aspects was gone into very thoroughly and has resulted in some very interesting recommendations, which might be adopted throughout the country. The conference was attended by representatives of the Bath City Council, the Georgian Group, local planning committees, the Bath Preservation Trust, National Trust, R.I.B.A., and observers from the Ministries of Health, Town and Country Planning and Works.

The main recommendation was that a statutory corporation should be set up to acquire buildings of notable character, and that these buildings should be properly converted as might be thought necessary. The corporation was to be enabled, as an alternative, to enter into agreement with the owners as to the maintenance, repair and reconditioning of façades and structures with a view to preserving their architectural character. An interesting recommendation was that owners of buildings listed under the Town and Country Planning Act should be relieved of the greater part of the cost of carrying out structural repairs, a principle already established on the Continent, as, since owners are precluded by law from freely pulling the buildings down, it is only logical that they should be assisted in keeping them up. It was suggested that such assistance should amount to 80 per cent. of the approved repairs.

It will be appreciated that any encouragement of this nature would have a far-reaching effect on saving soundly constructed and interesting buildings from lapsing into obsolescence and decay.

The paper is given elsewhere in this issue.

R.I.B.A.'s Congratulatory Message.

ON behalf of the Council and all members of the Institute, the president of the R.I.B.A. recently sent a telegram of congratulation and good wishes to Her Royal Highness the Princess Elizabeth, who is an Hon. Fellow of the Institute.

"Official" Work for Private Architects.

THE chairman of the Housing Committee of the L.C.C., in a letter on page 656, gives the information that at present

L.C.C. HOUSING IN THE SOUTH-WEST

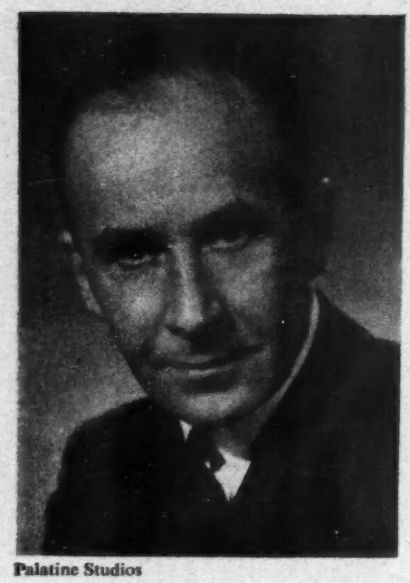
SITES FRINGING WIMBLEDON COMMON AND PUTNEY HEATH

THE London County Council has acquired or is in process of acquiring for housing purposes fourteen sites in the district fringing Putney Heath and Wimbledon Common. The largest has frontages to Roehampton-lane, Alton-road, Priory-lane and Clarence-lane, adjoining and overlooking Richmond Park. It covers approximately 115 acres and comprises two Georgian houses in extensive well-timbered grounds, with undulating parkland and ornamental tree-lined avenues. Another has frontages to Putney Heath, Putney Park-lane and Chartfield-avenue, and adjoins the Council's Roehampton estate. This site comprises the extensive gardens of five large houses, three of which have been demolished, and includes several fine avenues of trees, two ornamental lakes and three smaller residential properties. A further site has frontages to Portsmouth-road, Roehampton-lane and Bessborough-road, overlooking Putney Heath, while on the east side, fronting and adjoining Wimbledon Park Side, there are several smaller sites. Generally, the latter sites contain large Victorian type houses standing in spacious grounds, but many of the houses have suffered war damage or are unoccupied and both houses and grounds present a derelict appearance.

The Housing Committee, in its report to the Council on November 30, states: "In all, the fourteen sites aggregate about 305 acres and their development presents an excellent opportunity for comprehensive planning which would take into account the natural features of the area, the proximity of the common and the heath, and the prevailing development in the hinterland surrounding the proposed estates. As a basis for such a scheme of comprehensive planning, we have approved in principle a form of mixed development for one of the sites and, to enable such a development of the whole of the fourteen sites to be envisaged, a contour model embodying these principles has been prepared.

"Detailed surveys of the sites to show levels, trees, and other physical characteristics have not yet been completed; the layout of the individual sites as depicted on the model is therefore of a tentative character and subject to modification and adjustment when the fuller information necessary for precise planning is available.

"The tentative layout provides for two secondary schools, five primary schools, seven nursery schools and one county college. Suitable buildings will be retained and adapted as community centres and main and subsidiary shopping centres will provide, in all, for about 100 shops. Seven licensed refreshment houses are envisaged and sites will be reserved for a library, a health centre and other accommodation ancillary to community development. The net area available for housing is about 217 acres on which can be erected a mixed development of more than 6,000 houses and flats at a density of about twenty-eight dwellings to the acre, to provide accommodation for about 21,000 people."



Palatine Studios

Mr. Archibald G. Jury, F.R.I.B.A., F.I.Arb., M.R.San.I., A.I.Struct.E., who has been appointed Director of Housing to the Glasgow Corporation. He will take up his duties in January. He is 41.

48 architects in private practice are engaged on 61 schemes of block dwelling development. In addition, a further 4,000 flats in schemes allocated to private architects are scheduled for inclusion in subsequent programmes.

ESSEX County Council have commissioned the following private architects to design secondary schools: Denis Clarke Hall, F.R.I.B.A., Tooley and Foster, M.B.E., M.C., F. and A.R.I.B.A., and Yorke, Rosenberg and Mardall, F. and A.R.I.B.A. The schools form part of the 1949 building programme, and the architects will work in collaboration with Mr. H. Conolly, F.R.I.B.A., Essex County Architect.

A Talk on House-Heating Experiments.

A TALK on "Full-Scale Trials on House-Heating Systems" will be given by Mr. Richard Eve, B.Arch., A.R.I.B.A., on Tuesday, December 7, at the Royal Institute of British Architects, 66, Portland-place, W.1. Prior to the talk a film entitled "Heating Research in Houses" will be shown. This was specially made by the Crown Film Unit to explain the purposes of the experiment and the methods employed to obtain the answers.

Architects' Benevolent Society.

ON page 656 of this issue we publish a letter from the President of the Royal Institute of British Architects drawing attention to the needs of the Architects' Benevolent Society and the President's Half-a-Crown Fund. Each year the work of the Society grows more urgent and necessary, and although administrative costs are kept at a bare minimum, genuine claims made upon its resources exceed the total of sums received.

In bringing the work of the Society to the notice of our readers, we urge the greatest possible support be given the President's Half-a-Crown Fund.

Maintenance Scholarships in Architecture.

THE Architects' Registration Council of the United Kingdom offer for award in June, 1949, certain maintenance scholarships in architecture, consisting of a grant for the payment of one-third of the school fees and, when necessary, a maintenance allowance. The scholarships will be renewable from year to year until the student has finished his or her school training. They will be available for students of British nationality who could not otherwise afford such training, to enable them to attend architectural schools approved by the Council. The scholarships will be available both for students who have already begun their training and for students wishing to begin their training. Scholarships will not be granted to students who will be less than 17 years of age on October 1 of the year in which the examination is taken. Particulars and forms of application may be obtained from the Secretary to the Board of Architectural Education, 68, Portland-place, London, W.1. Copies of previous years' examination papers may be obtained on payment of 6d. The closing date for the receipt of applications is January 31, next.

"Britain Goes Ahead" Exhibition.

SOME of the ways in which Britain is regaining supremacy in industrial and scientific invention are used to support the call for increased productivity in "Britain Goes Ahead," the last of a series of economic exhibitions at Charing Cross London Transport Station which was opened by Lord Latham, J.P., chairman of London Transport Executive, on November 24. It demonstrates how the same inventiveness which produced and perfected recent inventions and discoveries can help the country out of her present economic difficulties, and how inventiveness can be used to cut costs without loss of quality and thus raise our standard of living. Several of the exhibits are contributed by manufacturers of building materials.

Airport Passenger Buildings.

MR. GORDON RUSSELL, C.B.E., M.C., R.D.I., F.S.I.A., Master of the Faculty of Royal Designers for Industry and Director of the Council of Industrial Design, has accepted an invitation to become a member of the Airport Furnishing Committee set up by the Minister of Civil Aviation, to advise on the heating, lighting, decoration and furnishing of passenger buildings at all state-controlled airports.

N.F.B.T.E. Presidency.

AT the November Council meeting of the National Federation of Building Trades Employers in London it was decided to nominate the senior vice-president, Mr. Norman Longley, of Crawley, as president for next year. Mr. R. O. Lloyd, O.B.E., of Liverpool, was nominated as senior vice-president, and Mr. W. Horsfall (Yorkshire Region), Councillor S. Hudson (Northern Counties), and Major J. Ian Robertson (Midlands) as vice-presidents. Mr. G. W. Buchanan, C.B.E., will again be nominated as honorary treasurer.

Mr. Norman Longley, M.I.O.B., nominated as President of the National Federation of Building Trades' Employers. (*See Note.*)

Minister Appoints Secretary.

THE Minister of Town and Country Planning has appointed Mr. J. D. Jones to be his principal private secretary.

COMING EVENTS

Friday, December 3.

THE PLUMBING TRADES CENTRAL APPRENTICESHIP COUNCIL FOR LONDON.—"The Craftsman," by Sir Thomas P. Bennett, C.B.E., F.R.I.B.A. Hammersmith School of Building, Lime-grove, W.12. 6 p.m.

Monday, December 6.

THE ROYAL INSTITUTION OF CHARTERED SURVEYORS.—"The Practical Aspects of Valuation under Part VI of the Town and Country Planning Act, 1947," by Mr. E. C. Strathon. Institution of Mechanical Engineers, Storey's Gate, S.W.1. 5.30 p.m.

THE SOCIETY OF ENGINEERS.—"Aluminium as a Structural Material—with Particular Application to Light Triangulated Structures," by Mr. C. Marsh, B.A. Geological Society, Burlington House, W. 5.30 p.m.

INSTITUTE OF CREDIT MANAGEMENT.—"The Principles of Price Control," by Mr. John Busse, C.B.E. 3, Berners-st., W.1. 6.15 p.m.

Tuesday, December 7.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.—"Full-Scale Trials on House Heating Systems," by Mr. Richard Eve, B.Arch. 66, Portland-pl., W.1. 6 p.m.

THE INSTITUTION OF SANITARY ENGINEERS.—"Building Drainage," by Mr. F. L. Barrow, M.Sc., A.M.I.C.E. Caxton Hall, Westminster, S.W.1. 6 p.m.

THE STUDENTS PLANNING GROUP.—"The Garden City Idea—Yesterday and To-day," by Mr. F. J. Osborn. The Planning Centre, 28, King-st., W.C.2. 6.15 p.m.

Wednesday, December 8.

THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—"Methods of Maintaining Bacterial Purity of Air," by Mr. R. E. O. Williams, B.Sc., M.D. Institution of Mechanical Engineers, Storey's Gate, S.W.1. 6 p.m.

Thursday, December 9.

PLANNING FORUM.—"Man-power," by Mr. A. E. U. Maud and Mr. G. D. N. Worswick. Planning Centre Hall, 28, King-st., W.C.2. 6.15 p.m.

TOWN PLANNING INSTITUTE.—"The Validity of Building Density and Other Theoretical Standards," by Mr. R. Nicholas, C.B.E., B.Sc. Caxton Hall, Westminster, S.W.1. 5.30 p.m.

THE INSTITUTION OF STRUCTURAL ENGINEERS.—"Semi-Graphical Integration Applied to the Stress Analyses of Redundant Frames," by Mr. R. G. Robertson. 11, Upper Belgrave-st., S.W.1. 6 p.m.

THE INSTITUTE OF TRANSPORT.—"Premises for the Operation and Maintenance of Public Service Vehicles," by Mr. S. Kennedy, M.Inst.T. 66, Portland-pl., W.1. 5.30 p.m.

FROM "THE BUILDER" OF 1848

Saturday, December 2, 1848.

CHICHESTER TRAINING SCHOOL COMPETITION.—We have received a letter, too late for insertion, directing attention to the unsatisfactory terms of the advertisement for designs in this case; and to some still less satisfactory replies to private inquiries. Would-be competitors should take the hint.

THE CONVERSION OF TERRACE HOUSES

Economic and other Considerations

THE contribution which the conversion of terrace houses can make towards meeting the need for middle-class accommodation was emphasised by MR. HUGH ROBERTS, F.R.I.B.A., in a paper on "The Conversion of Terrace Houses," which he read before a recent meeting of the London Society held at the Royal Society of Arts, John Adam-street, Adelphi.

Mr. Roberts said: It is hardly necessary to stress the continued need of housing accommodation all over the country. Although Council houses have made and continue to make a substantial contribution to the housing of working-class families, there is still a very urgent need for what we may, for the sake of convenience, term middle-class accommodation; in addition to houses, there is considerable demand for the smaller type of accommodation suitable for the family of three or less, young married couples, elder persons and single people.

The conversion of suitable houses should and could contribute largely to such needs. Many people will be aware of the Report of the Sub-Committee of the Central Housing Advisory Committee on this subject, commonly known as the Silkin Report.

The general conclusions of this report state that it has been established that many large and well-constructed houses, especially those built in terraces, could be converted into a greater number of separate and convenient dwellings, and also point out that many of these houses have considerable architectural and economic value and, although outmoded, could in this way be given a further period of useful life.

There are two further aspects, on what I may term the case for conversion, which might have been more fully emphasised; firstly, the fact that conversion of out-of-date houses involves little or no site work, no new roads or main services, and in all probability none of those expensive etceteras which are necessities for a new housing estate or town, churches, cinemas, shops and travel facilities being nearly always available close at hand; and, secondly, that conversion can, as often as not, be readily carried out by the hundreds and thousands of small jobbing builders who would normally make little or no contribution to council or other new housing work.

I will not bore you with unnecessary statistics, but the Silkin Report intimates, from careful evidence, that there are perhaps a quarter of a million houses suitable for conversion: that is, a potential half to one million dwellings, all of which would not only cost far less than new houses or flats, but would have the added advantages of preventing the depreciation of an existing capital asset.

During the first part of this century we have witnessed the growth of towns and cities by the addition of new housing estates on their fringes, which have all too often left behind a derelict waste of 18th- and 19th-century houses.

While many of these houses had fine interior decoration and were substantially constructed, they were built at a time when sanitary accommodation was only a very secondary consideration, with the result that most of them have been altered and extended in the last 100 years to accommodate baths, basins and w.c.s. Unfortunately, in many cases this problem has not been handled in the best manner, with the result that rear elevations have exuded an outcrop of sanitary excrescences, and down pipes of all descriptions have been fixed to both front and rear elevations with no thought of the effect on the architectural composition.

The field of conversion is, as you will appreciate, a wide one in these days of housing shortages; barns, stables and all manner of buildings are being utilised, let alone Victorian and other mansions, or, at least, those which have not been taken over by the Coal Board or other similar bodies. I have therefore decided to limit the scope of this lecture to the conversion of terrace houses, although many of the problems which present themselves will be just as applicable to other types.

No General Rules.

One of the chief difficulties, if not the overriding one, which we have to contend with is that of economics; as a general rule (and unfortunately with conversion there are no general rules, as each property has to be judged on its individual merits) a conversion scheme will cost at least £500 per unit, if not more. Besides the cost of building alterations, there is, as often as not, the leeway of war and pre-war lack of maintenance to be made good, apart from considerable alterations to services.

The price of any suitable dwelling accommodation, however outmoded, has recently been so high that if the cost of conversion is added to this an economic return is not obtainable. This, of course, is the main reason why more conversion has not been undertaken. Large houses are so much more easily made into makeshift adaptations which, in the present housing shortages, can be let at high figures (although the recently formed Rent Tribunals are doing much to check the worst abuses). Most of these properties have had no money spent on maintenance. The owner will make a large and quick return on his money and will then sell out for what he can: the quickest way of making tenements and manufacturing slums. You will all know examples of well-built houses in former prosperous areas which have now become derelict. Unfortunately, such retrogression does not affect the one house but the adjoining properties and area as a whole, which will rapidly deteriorate.

In view of the present high cost of building, etc., it appears to me that conversion as a sound economic proposition can, in the main, only be undertaken by two classes of persons. Firstly, the private owner who has purchased the property before the rise in prices brought about by war-time conditions, in which case the problem is to encourage and persuade such a person to spend money on a long-term investment at a reasonable return as against a short-term policy of inadequate adaptation which will offer a high return but with an ever-decreasing capital asset. There is no doubt that the owner-occupier of a house which is too large for his present needs (and there are many such) should receive every encouragement to undertake a proper conversion scheme. There is also no doubt that in most cases, for such persons, it is a sound economic proposition. Secondly, local authorities who have powers of compulsory purchase; in their case, it is generally a question of the reconstruction of derelict or partly war-damaged properties, which very fact often makes conversion all the easier. There is, in addition, a third category; the speculator who purchases a suitable property and then gets his money back by way of premiums. This, however, generally applies to London only, where rentals are considerably in excess of those in the provinces.

Now for a word with regard to accommodation. At present almost any reasonable accommodation will be certain to find a ready tenant, but the decision as to the best arrangements must depend on a number of considerations. Many of these houses may have notable architectural features which the owner and architect will wish to retain, and this may affect planning. Locality has to be considered. As I said before, one cannot make hard and fast rules but, generally speaking, if families with children are to be housed, it is best that they should occupy the lower part of the house, where they can benefit from the use of the garden. Again, houses in the centre of a city are more suitable for conversion into small flats for business people who have not acquired, or who have relinquished, family responsibilities. The owner may wish to house relations, and a not uncommon arrangement is that of a "granny flat" for an elderly person who wishes to live her own life but at the same time have the advantage of someone readily available in case of emergency.

Maisonettes are more suited to the larger house, but in other cases a combination of flats and maisonettes may be the best solution. In some cases service flats may be desirable, and they will fill a real need for people who require relieving of the heavier type of domestic duties. A caretaker's flat is often desirable, the caretaker being responsible for cleaning the staircase, entrance, etc., and for the removal of rubbish.

Conversion is a challenge to the architect and has a certain fascination akin to that of a crossword puzzle and, like crossword puzzles, some are easier than others, and a few seem incapable of solution.

Personally, I find one's first ideas are apt to turn out uneconomic and that one must be quite severe with oneself, always assuming that one does not break the essential standards. These standards are set out in detail in the Silkin Report, but the principles may be briefly stated as follows:—

Each flat or maisonette should be self-contained and should have free access to dustbins, fuel stores, etc., without trespassing on another tenant's premises, and should have a separate bathroom and w.c., and proper accommodation must be provided for storage of food, etc. "Package" kitchen units we have found very useful for smaller conversion schemes.

As I have already said, one should not approach a scheme with any preconceived ideas but, after one has done a number of conversion schemes, certain plan types are apparent, and as often as not one finds that any scheme will in general principle fall under one or other or a mixture of certain fixed types.

There is, for example, what is commonly known as the horizontal type of conversion scheme; one has to have two or more adjoining houses for such a project, and the essence of it is that one flat is formed out of the same floors of two houses, probably by the removal of one staircase. This, undoubtedly, is one of the better types of conversion scheme, but is more generally met with in local authority schemes than those of private enterprise. Its cost makes it more suitable for war damaged or derelict property and, of course, the majority of private owners only have one, not two,

houses. In contrast, there is what is known as the vertical type, i.e., two or more dwellings above each other formed out of one house. This is the example of the humbler type of house with the not unusual back additions, affording a ground-floor flat, with 3-bedroom maisonette on the two upper floors. There is also the more composite type in which the basement and ground floor are maisonettes with horizontal-type flats over.

We will now pass on to various detailed planning aspects.

GARDENS.—Communal gardens where access is available to all tenants are best, first where a caretaker is available to look after their maintenance and, secondly, where the gardens of several houses can be run in together. The more usual procedure is to let the tenants of the lower flat or maisonette look after the garden.

BASEMENTS.—In hilly localities, some basements are in fact merely lower ground floors which are at the garden level behind and which are quite suitable for general habitation. Others wholly below ground are better utilised as store-rooms, which are a distinct asset to the tenants as long as there is direct access from the main staircase and they are dry and well ventilated. Many terrace houses have vaults under the basement which can be utilised for coal and fuel stores.

ATTIC FLOORS.—These are quite often suitable for habitation, particularly if, where low ceilings occur, the ceilings are taken out and the roof space taken into the room, especially where living- and bedrooms are concerned. New or enlarged dormer windows may also be required.

PRAMS AND BICYCLES.—Space should be provided at ground-floor level for prams (and possibly bicycles), but this admittedly is often a difficult problem. Built-in delivery cupboards in the hall, where tradesmen and others can leave messages and goods, are also an advantage.

Another difficulty is the question of sound installation, particularly between dividing walls in each house. It is best, if possible, to plan the flats between existing party walls.

SERVICES.—With regard to this question, central heating is not normally provided. There are so many alternatives available to suit individual requirements in the way of gas and electrical appliances that central heating is of doubtful value, besides which the normal scheme is generally too small to allow an economical use of a central boiler for the heating of a number of flats. It is normally found that tenants like to be responsible for their own heating requirements. Gas or electricity is desirable as an alternative means of heating, hot water and cooking, but one has to be content with electricity if gas is not available. Hot water from a gas heater or an electrical storage heater is usually more practical, if less economical, than the normal hot water boiler, particularly as flat dwellers can be expected to be away from home more often than householders.

Refuse chutes, lifts, central vacuum installations, etc., are generally impracticable for the same reasons as central heating, and because schemes are not large enough to warrant such installations.

It is, of course, essential to eliminate all pipes, with the exception of rainwater pipes, in their proper architectural context from the front and, where possible, from the back elevations, particularly of properties of special architectural value. With careful planning this can sometimes be done by the use of internal ducts which prove very satisfactory in use as, quite apart from other considerations, they eliminate freezing up in winter. No objections to their use are now made by local authorities.

FIRE ESCAPE.—Finally with regard to escape in case of fire. With proper planning iron escape staircases at the back of terraces can be dispensed with by adequate means of escape on to the roof and over adjoining property. In the majority of cases staircases are built within fire-resisting walls, and if self-closing, fire-resisting doors leading on to the staircase are adopted, the requirements of the authorities should be satisfied.

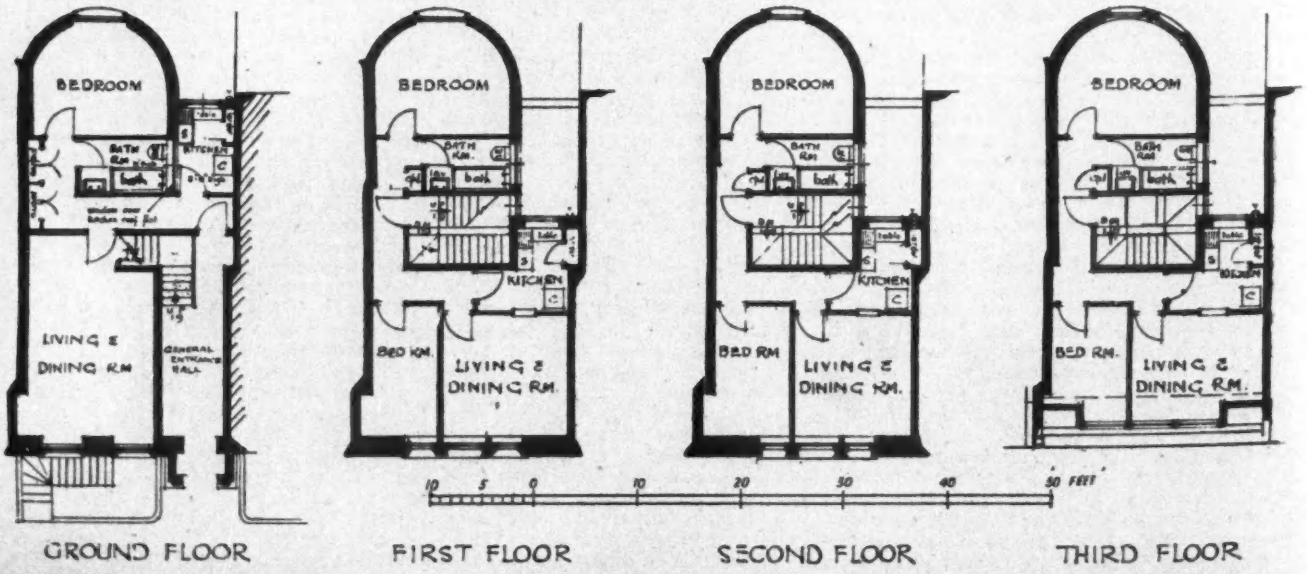
THE RESTORATION OF GEORGIAN BATH

IN the reconstruction of war-scarred Bath, which in the "Baedeker raids" in April, 1942, had 16,000 of her 19,000 houses damaged, it is often necessary to maintain the front elevations to preserve the architectural unity of crescent, terrace, square or circus. Yet to meet twentieth-century needs it is undesirable to reconstruct five-storey houses with only two rooms on each floor. Flats and maisonettes provide better accommodation for present social conditions, but present certain technical problems. The problems are principally ones of providing sufficient external wall face for daylighting in narrow-fronted houses. There is often adequate floor area available on one or two floors. While therefore the horizontal linking of two houses may provide a solution in certain cases where flues in the party walls or difference of levels are not too great an obstacle, there are also many solutions of the problem within the party walls of a single house. Three such solutions designed by Messrs. Mowbray Green and Partners, AA.R.I.B.A., are illustrated.

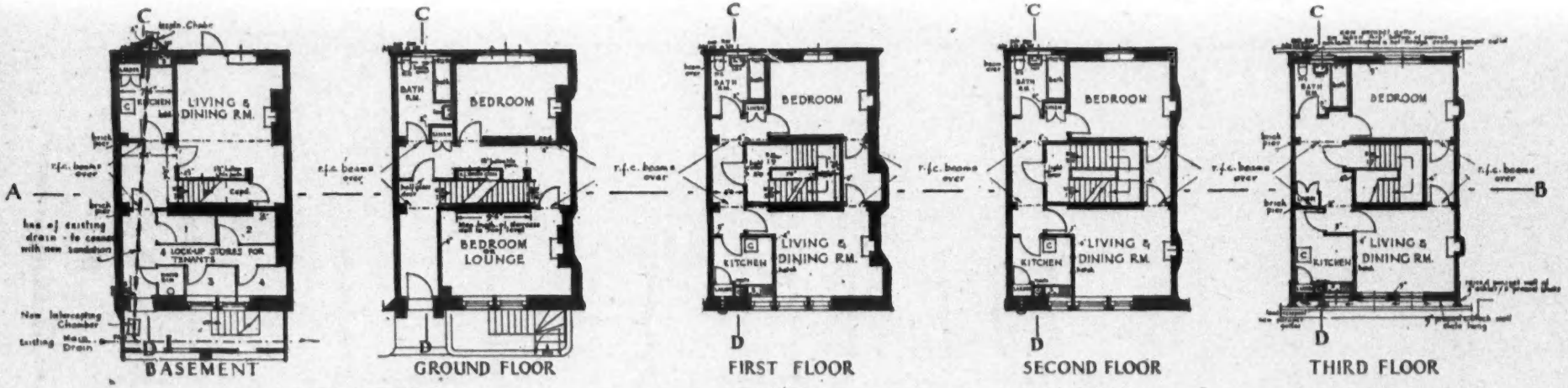
A House in Rivers-street.—The staircase has been set parallel to the front wall in the centre of the building and is provided with a top light by a lantern. Even if the front part of the roof is built as a mansard instead of as the flat roof shown it is still better to avoid the internal gutter of the traditional M-shaped roof by providing a flat roof over the back part. Having "saved" the external wall face normally occupied by the stairs, it is then possible to arrange a living-room, bedroom, kitchen and bathroom at one level.

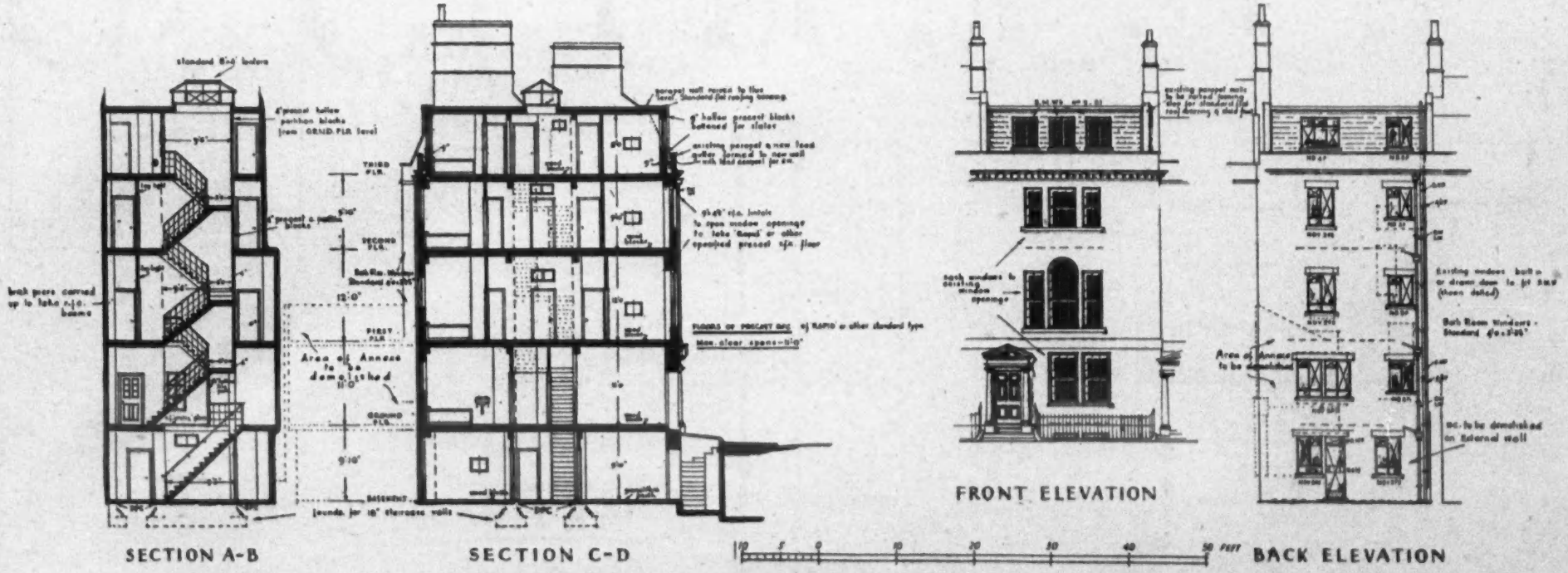
A House in The Circus.—By the provision of an internal light well, bathrooms and w.c.s are lit and ventilated, thus providing hygienic appendages which all too frequently in the past were cantilevered from the back wall and spoiled the architectural composition. The rooms in The Circus being very high, it was found possible to introduce an additional mezzanine storey in the rear part of the building. This, of course, could not be done on the front elevation in view of the architectural design of The Circus. Where the front rooms would have been excessively high, false ceilings have been introduced. In this way three convenient self-contained maisonettes have been arranged to replace one house.

A House in Brock-street.—A third solution to the problem can be provided by "indentation" of the back wall, providing a greater length of external face. Although this means a loss of total floor area, the loss is justified by the provision of a two-bedroomed flat at each floor level. Whereas in the first example only one bedroom was possible, the siting of bathrooms and kitchens lighted at the "indentation" allows the additional bedroom to be planned.

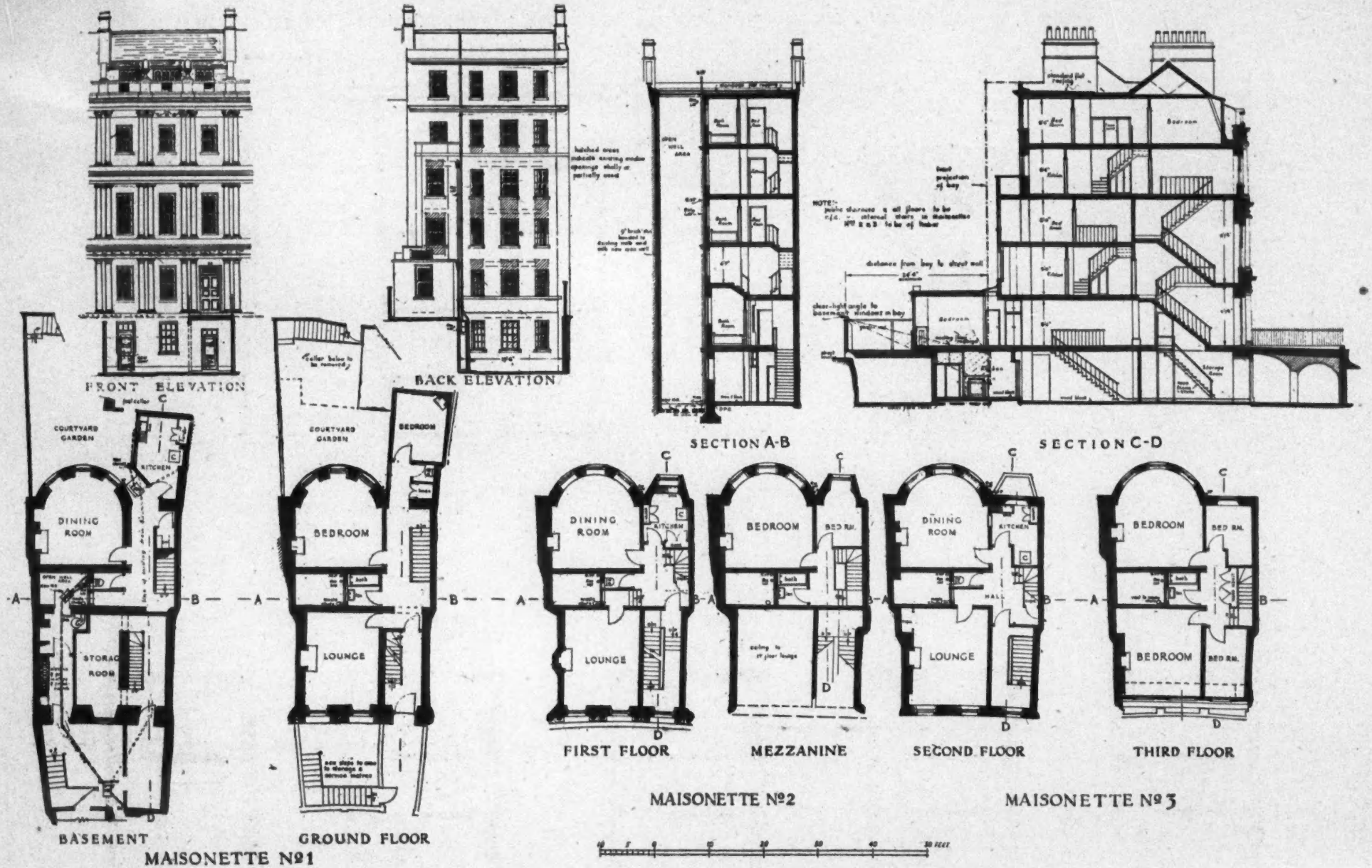


HOUSE IN BROCK-STREET, BATH, RECONSTRUCTED AS FLATS. Mowbray Green and Partners, Architects.





No. 7, RIVERS-STREET, BATH, RECONSTRUCTED AFTER WAR DAMAGE. Mowbray Green and Partners, Architects. *(See page 646.)*



No. 20, THE CIRCUS, BATH, RECONSTRUCTED AFTER WAR DAMAGE. Mowbray Green and Partners, Architects. (*See page* 646.)

Boiler-house No. 3.

CENTRAL OFFICES AT NEWCASTLE-UPON-TYNE

For the Ministry of National Insurance

NEVILLE HINWOOD, M.M., A.R.I.B.A., ARCHITECT

(of the Chief Architect's Division, M.O.W.)

THE Ministry of National Insurance Central Offices occupy a site of 64 acres at Benton, Newcastle-upon-Tyne. An adjacent site is being acquired for the future permanent buildings. The office buildings, which house 8,000 staff, are of a temporary character, consisting of 16 blocks of a standard one-storey block, having six wings with a central entrance hall, cafeteria, etc.

The construction consists of a light steel frame, hollow wall (hollow blocks or bricks externally and hollow blocks internally), steel deck roof covered with building board and bitumen sheeting, concrete and pitch-mastic floors, and standard steel sash windows.

Plastering has been omitted, distemper in various colour schemes being applied to smooth surfaced hollow block partitions.

As far as possible, the main corridors of the blocks have been linked up to facilitate communication. Loading platforms for incoming and outgoing mail have been provided. A telephone exchange and telegraph office have been installed, and there is a branch office of one of the well-known banks.

Ancillary buildings include two large canteens, each providing 2,500 mid-day meals, three boiler-houses, garage, maintenance workshops, cycle shelters, etc. The approximate total cost of the whole scheme was £1,400,000.

Work was commenced on concrete roads and sewers in January, 1946, and Blocks 1 to 4, one of the large canteens and a boiler-house were completed by August 15, 1946. The remaining blocks were completed at the rate of one every five weeks, the last being occupied by the end of October, 1947. Work on pneumatic tube ducts, workshop, garage and gardening has been proceeding since and is now almost finished.

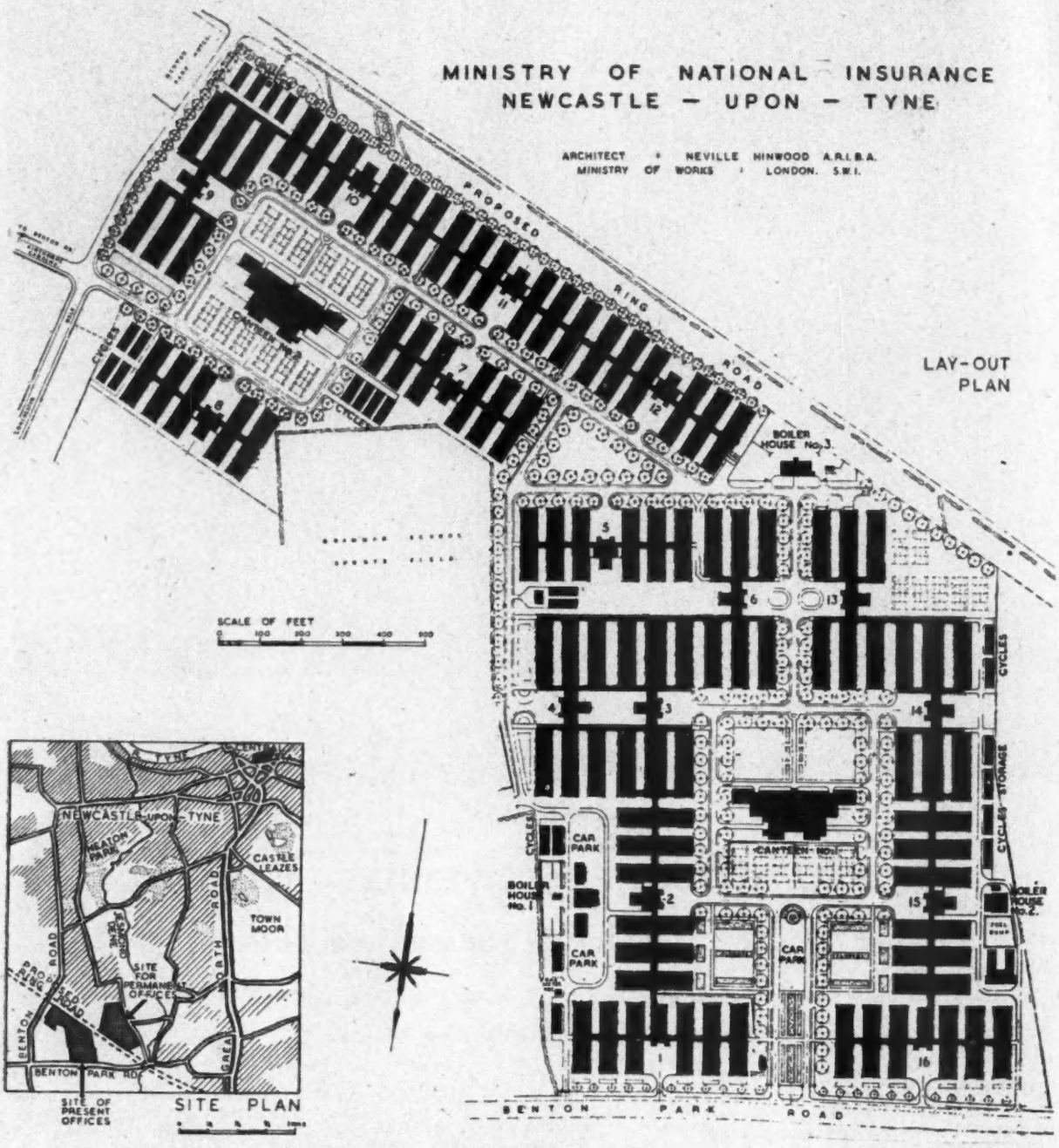
The layout has been planned to give as compact a scheme as possible with central canteens, car parks and open spaces which provide sites for tennis courts and bowling greens. A new railway station has been built close by.

Central heating is provided from three boiler-houses, with high pressure hot water distribution through underground ducts to calorifier chambers. From these, low pressure hot water heating is provided in the offices by pipes and cast-iron radiators, and domestic hot water to lavatories, etc. The heating is automatically controlled by inside and outside thermostats which operate blending valves to vary the temperature of the circulating water suitably.

Six high pressure hot water boilers in two boiler-houses are of the three-pass economic type, with balanced draught and automatic "Doby" stokers for the first half of the site. For the second half, three high pressure hot water boilers of the Lamont type in one boiler-house have been installed with "Hodgkinson" stokers and with overhead coal bunkers, coal elevator and bunker feeding conveyor.

The two canteens have gas-fired equipment and the kitchen ventilation is by central extract plant.

The M.N.I. expect to deal with 30,000 claims per day, and this will involve sending papers from the incoming post to various departments, and finally to the postal despatch office over a quarter of a mile away.



Layout. *Below*: **Entrance to Block No. 2.**

the papers possibly travelling some miles in the course of a few hours. A specially designed pneumatic tube system has been installed in special subways and underground ducts.

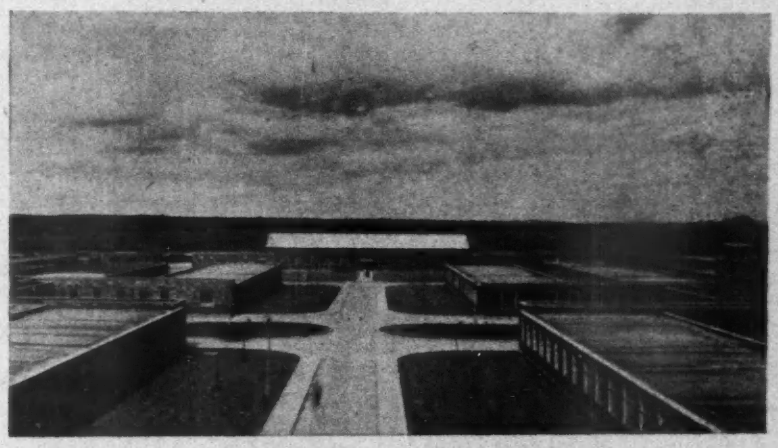
Two exhauster plants are housed in separate buildings to provide power to handle the large number of specially designed containers.

For water supply, the site is served by three 3 in. diameter cast-iron ring mains with 4 in. diameter connecting links. The estimated consumption is 80,000 gallons per day and a total storage of one day's consumption is provided. Copper is used for distribution pipes and for internal service pipes to fire hose reels and drinking water points. Internal service pipes to storage tanks are in lead. A good standard of plumbing design has been adopted throughout. Waste units for sanitary fitments, single and in ranges, are fully trapped and ventilated, and are mainly formed of rapidly assembled copper tube and brass components.

The architect is Mr. Neville Hinwood, M.M., A.R.I.B.A., of the Chief Architect's Division of the Ministry of Works.

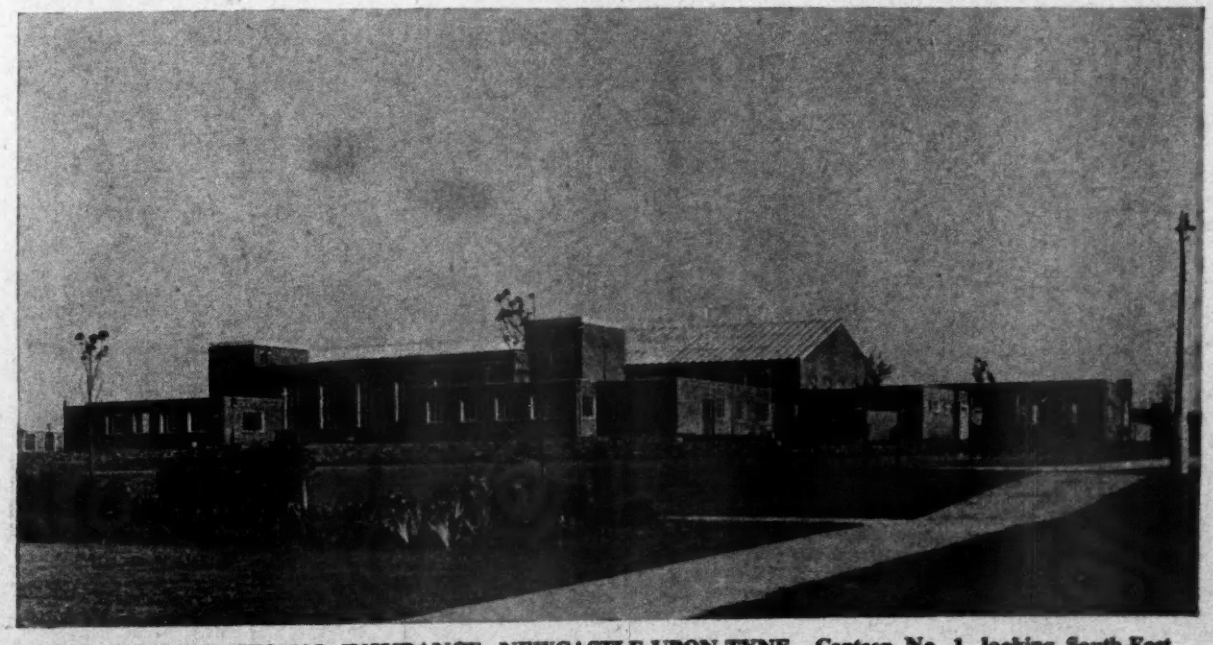
The general contractors were Messrs. George Wimpey and Co., Ltd.

The principal sub-contractors were: Structural steelwork, (1) Cargo Fleet Iron Co., Ltd., (2) Universal Steel Door and Engineering Co.; steel deck roofing, Ruberoid Co., Ltd.; steel casement windows, (1) Rustproof Metal Window Co., (2) Williams and Williams, (3) Middlesbrough Casements, Ltd.; glazing, James Thow and Co.; roof lights, Lenscrete, Ltd.; window opening gear, Arens Controls, Ltd.; suspended floors, Concrete, Ltd. (Bison Precast); facing bricks, Crossley and Sons, Ltd.; common bricks, (1) Hartley Main Collieries, Ltd., (2) James White, Ltd.; reconstructed stonework, (1) Ace Products, (2) John Lant and Co.; terracotta hollow blocks, National Brick Co.; asbestos cement roof tiles, Turners Asbestos Cement Co., Ltd.; fixing of roof tiles, W. M. Walker and Co., Ltd.; pitchmastic floors, (1) Val de Travers Asphalte Paving Co., Ltd., (2) The Neuchatel Asphalte Co., Ltd.; roller shutters, (1) Dennison Kett and Co., (2) Messrs. Haskins, (3) Shutter Contractors, Ltd.; hardboard linings, Celotex, Ltd.; paint, Smith and Walton, Ltd.; painting, F. J. Pilling Bros.; floor hardening product, "Lithurin," Chemical Building Products, Ltd.; quarry tiles, Haines and Corry, Ltd., and J. C. Edwards; grano floors, Pilling Bros.; plumbing, F. G. Skerritt, Ltd.; joinery, Universal Joinery Works; gardening work, G.P.G. (Newcastle); bitumen sheet tanking to ducts, (1) Messrs. Ruberoid, (2) F. McNeill and Co., Ltd.; bar fittings, Gaskell and Chambers; heating installations, Z. D. Berry and Co., Ltd.; insulation of mains, Cork Insulation Co., Ltd.; installation of boilers (three-pass Economic type), Foster Yates and Thom, Ltd. (Lamont type) Lamont Steam Generators, Ltd. (Ivor Power Co., Ltd.); electric light and power (internal), (1) Berkeley Electric Co., Ltd., (2) Matthew Hall and Co., Ltd., (external underground), Power Lines Co., Ltd.; pneumatic tube system, Lamson Engineering Co., Ltd.; public address system, G.E.C., Ltd.; kitchen ventilation, Air Control Installations, Ltd.

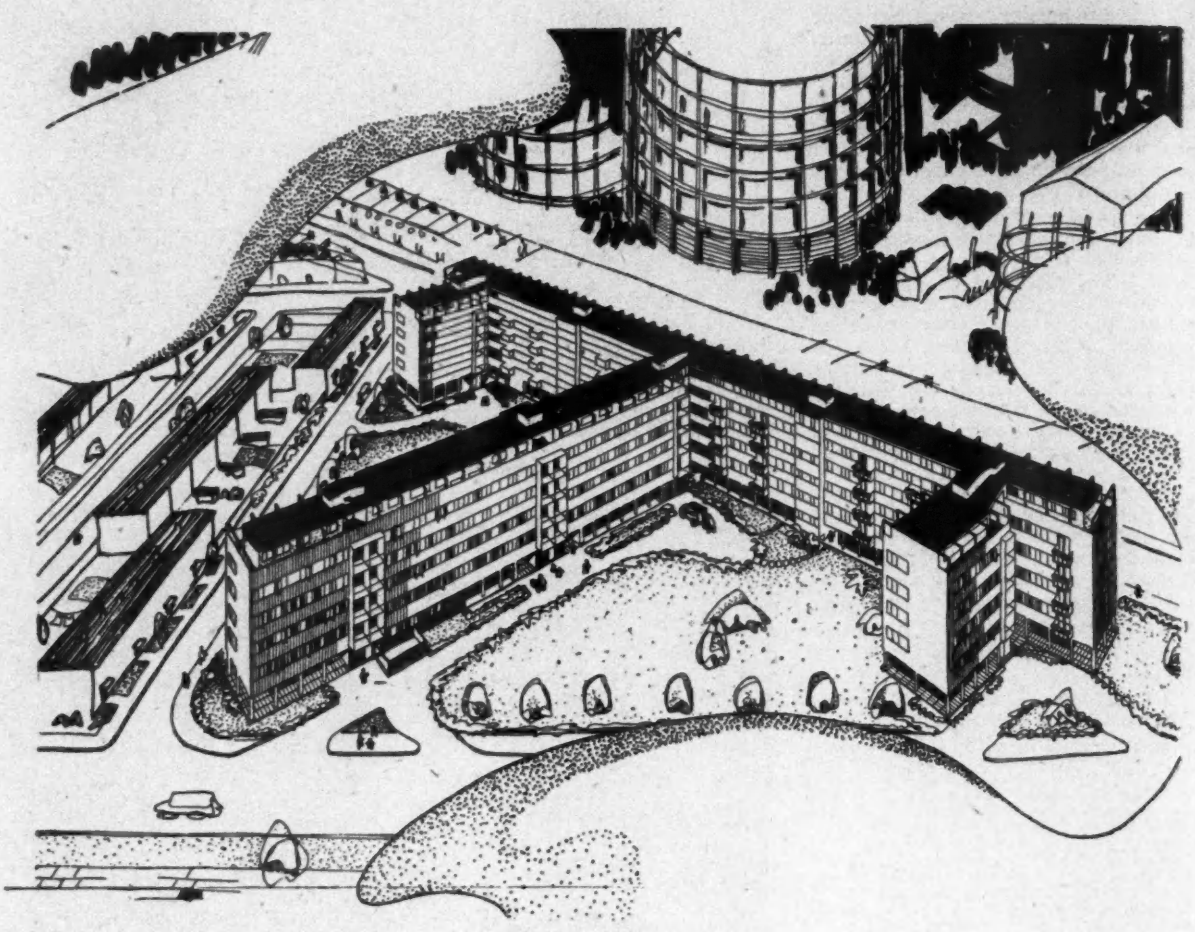


Canteen No. 1, looking North.

One of the lounges attached to the canteen.



MINISTRY OF NATIONAL INSURANCE, NEWCASTLE-UPON-TYNE. Canteen No. 1, looking South-East.



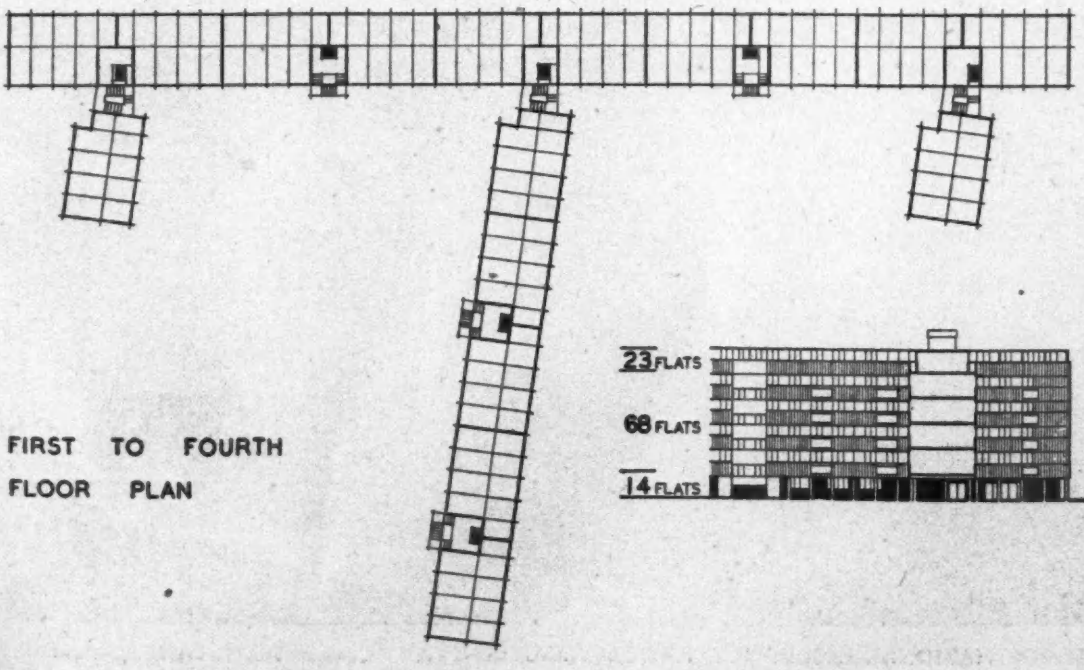
An aerial view of the scheme.

FLATS IN THE ABBOTT ROAD AREA

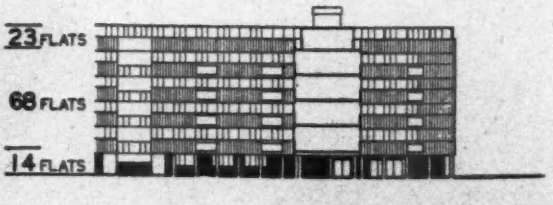
For the Poplar Borough Council

W. J. RANKIN, A.M.I.C.E., M.I.MUN.E., BOROUGH ENGINEER AND SURVEYOR

C. H. WEED, A.R.I.B.A., PRINCIPAL ASSISTANT ARCHITECT



FIRST TO FOURTH FLOOR PLAN



THE six-storey block of flats now under construction on a triangular-shaped island site in neighbourhood No. 10 of the Stepney-Poplar reconstruction area is being built on totally unconventional lines.

It was in late 1945, under the direction of the then borough engineer and surveyor to the Poplar Borough Council, that the project was commenced. Research initiated with the object of finding an alternative to brick resulted in the development of a structural form and fabric that also dispenses with the need for scaffolding and reduces temporary formwork to a minimum.

The building has a structural steel frame made up of standard rolled sections clad externally with precast concrete panel units. The cladding, hung by specially devised fixings on horizontal steel angle members, is erected entirely from the inside. To produce a surface of good weathering quality and texture, the pea shingle aggregate is exposed on the face by hosing with a water jet whilst the concrete is still green and in the mould. The panels are vibrated during manufacture and lightly reinforced for handling. The horizontal edges are rebated for weathering, vertical edges grooved as an anti-capillary check, and all edges slightly arrised to form V-jointing on the face.

The cladding panels and a 2 in. thick wood-wool inner lining act as permanent formwork during construction for a 4 in. thick lightly reinforced *in situ* concrete infilling between, and these together constitute the external walling. Before placing the wood-wool lining and infilling, vertical joints are sealed on the inside by a strip of roofing felt bedded in a bituminous compound. All suspended floors are of hollow tile construction and have a fibreboard lining to the soffit. The staircases are of normal reinforced concrete.

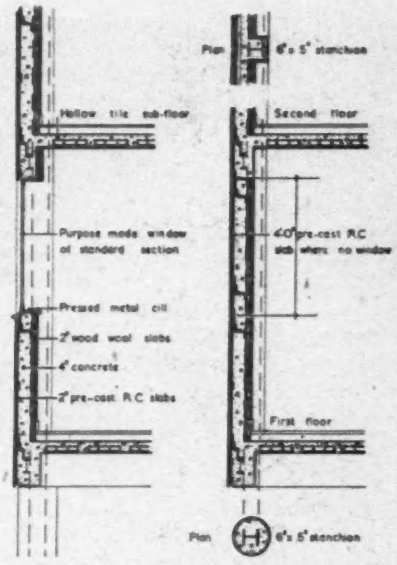
At the outset the ground floor was to have been open except for stores and service rooms, but for reasons of economy it will now contain a number of flats, although the open effect is to be retained in some measure by setting most of the external walling back behind free standing columns. This walling is in 11-in. cavity brickwork faced on the outside with "Rustic Flettons." On the top floor the walls are also set back, in this case to provide balcony access as well as alternative means of fire escape. These have a half brick outer skin with a rendered finish, a 2-in. cavity and an inner leaf of 2 in. thick foamed slag concrete blocks. The six storeys contain altogether 105 flats. On the first to the fourth floors an identical four-roomed type is arranged in pairs with a staircase and a lift serving every pair at each floor level. An exception to this arises at the junction of the wings, where three flats are reached from one staircase and lift instead of the usual two. Three of the four-room type and a number of small flats for old people are planned on the ground floor, and on the top storey a variety of three- and two-roomed types is provided.

Well over half the total number of flats are the four-roomed type, each with a utility room and drying balcony in addition to its own sun balcony. Bedrooms are entered from a lobby off the living-room, so that wastefulness in passages is avoided. A boiler in the kitchen will provide domestic hot water and also heat a radiator in the living-room. Smaller flats will have gas or electric water heaters. Living-rooms have open fires.

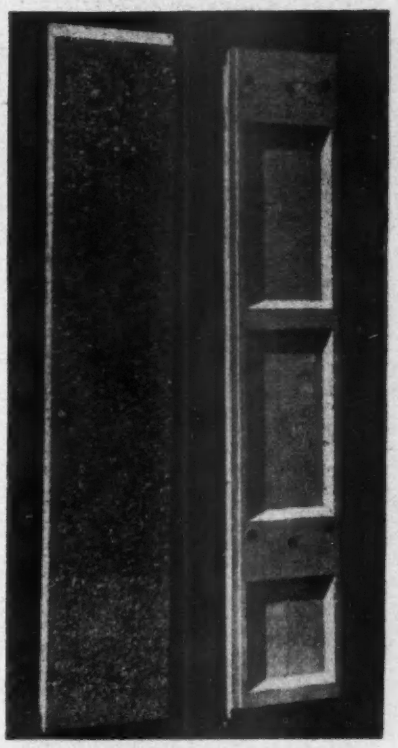
The flooring in living-rooms, bedrooms and lobbies is to be boarding on timber battens, and this will be laid on an insulating glass wool covering to the structural slab. Elsewhere asphalt will be used except to the public stairs and lobbies, which are to be finished with granolithic paving.

Windows will be purpose-made steel casements of standard domestic section.

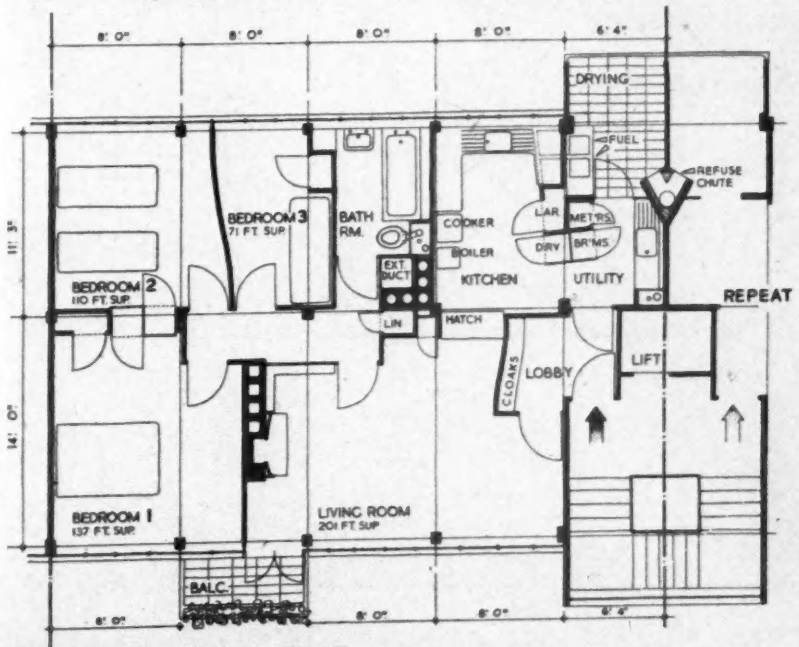
The scheme is under the direction of Mr. W. J. Rankin, A.C.G.I., A.M.I.C.E., M.I.Mun.E., A.M.T.P.I., the Borough Engineer and Surveyor. Mr. C. H. Weed, A.R.I.B.A., is the principal assistant architect.



SECTION THROUGH WALL

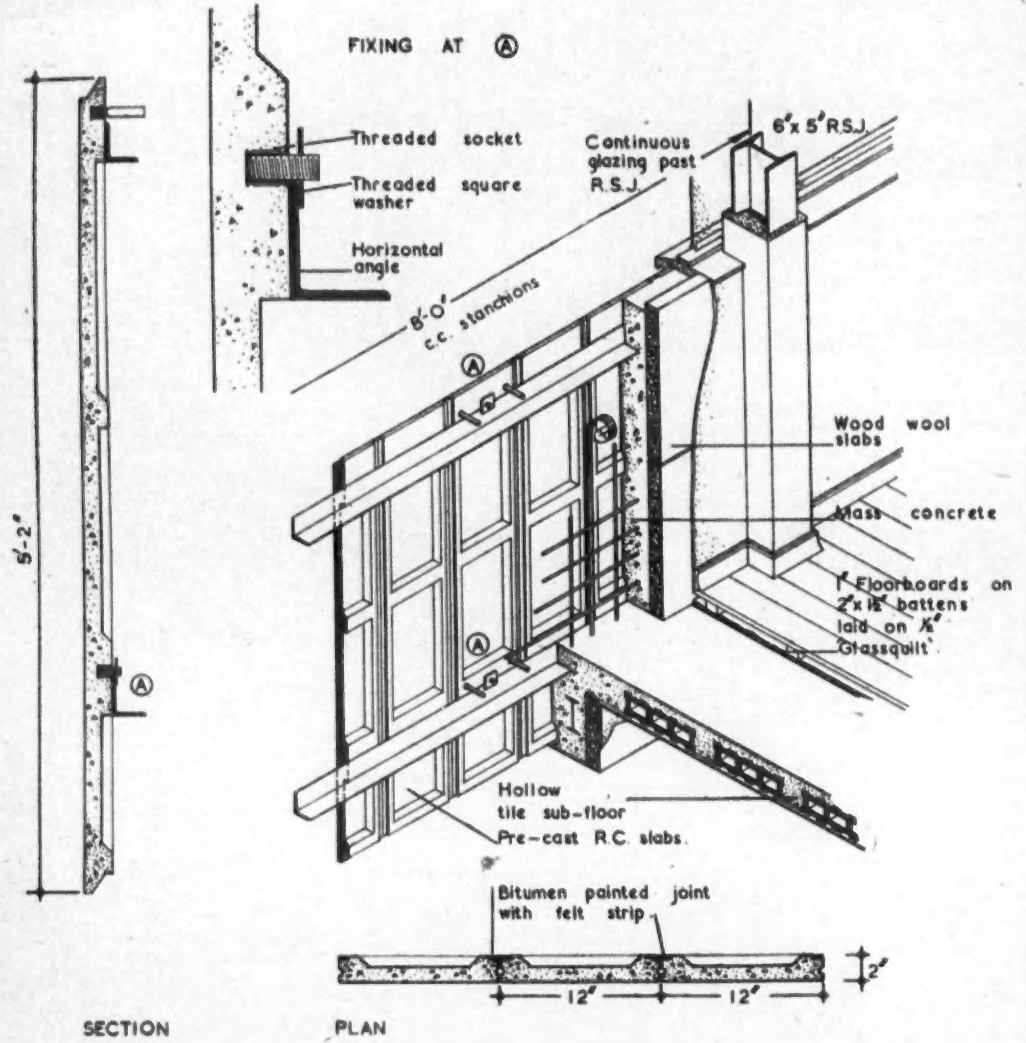


Detail of the panels used. Three short lengths of internally threaded tubing are cast in top and bottom at the back for the fixing.

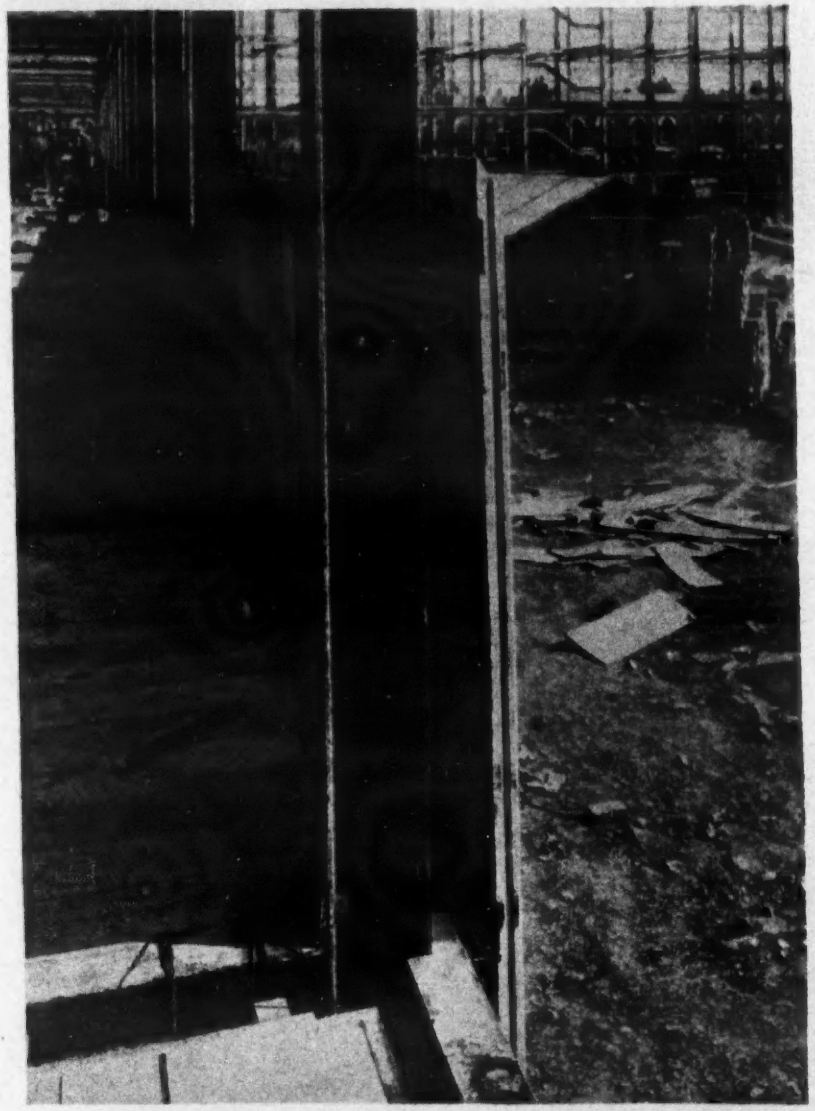


PLAN OF TYPICAL FLAT SIX-STOREY

The general contracting work is being carried out by the Direct Labour Section of the Borough Engineer and Surveyor's Department of the Poplar Borough Council, and the sub-contractors and suppliers include: Steelwork, Matt. T. Shaw and Co., Ltd.; concrete, Helical Bar and Engineering Co.; plumbing and hot water, G. N. Haden and Sons, Ltd.; sanitary fittings, John Knowles and Co. (London), Ltd., Standard Range and Foundry Co., and T. A. Harris, Ltd.; joinery, Sharp Bros. and Knight, Ltd., and John Sadd and Sons, Ltd.; metal windows and doors, James Couper and Co., Ltd.; electrical installations, London Electricity Board; gas carcassing, Commercial Gas Co.; lifts, Express Lift Co.; timber doors, Montague L. Meyer, Ltd.; balcony balustrades and staircase handrails, T. W. Palmer and Co.; asphalt, H. V. Smith and Co., Ltd.



EXTERNAL CLADDING DETAILS



The slabs are hung from horizontal steel angle members of the frame.

FLATS IN THE ABBOTT ROAD AREA, FOR POPLAR M.B.C.

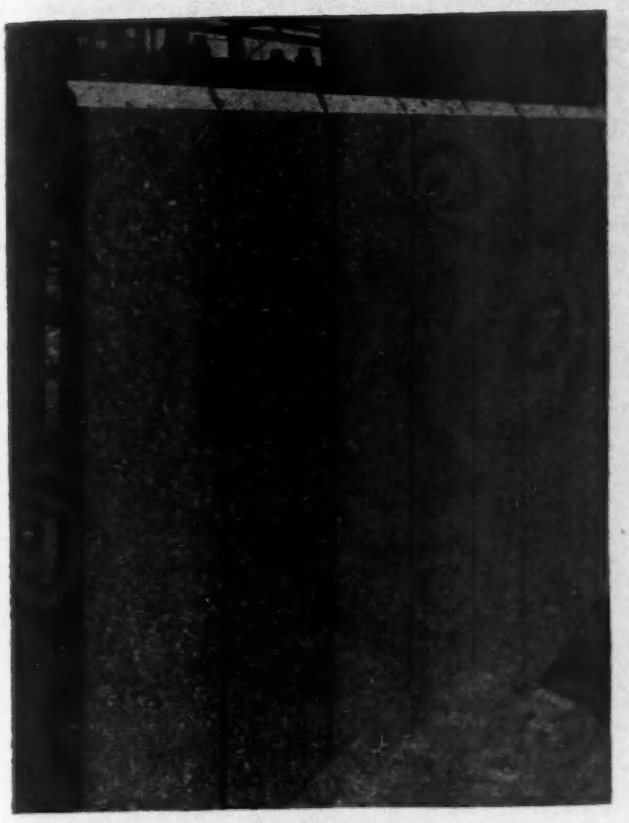


Fig. 1.

Fig. 2.

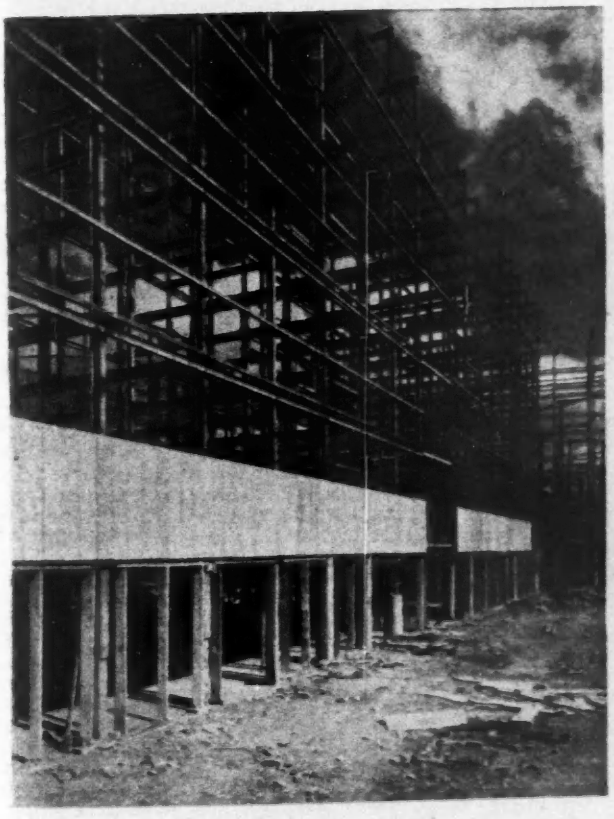


Fig. 3.

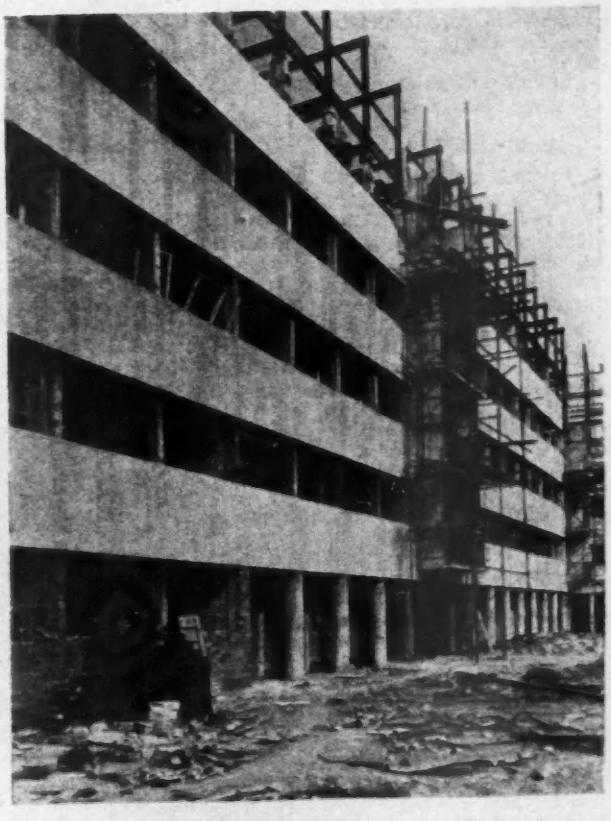


Fig. 4.

FLATS FOR POPLAR B.C. Fig 1.—The textured finish and jointing of the slabs in detail. Fig. 2.—A threaded tube screws into the centre hole top and bottom and a taped and threaded washer on the tube engages over the flanges of angle members. Vertical joints are sealed inside with a strip of roofing felt fixed in bituminous mastic. Fig. 3.—The building has a structural steel frame clad on the outside with precast panel units. Fig 4.—The cladding panels extend from head to cill between the lines of continuous fenestration.

CORRESPONDENCE

Architects and the L.C.C.

TO THE EDITOR OF *The Builder*.

SIR,—My attention has been drawn to the article entitled "Architects and the L.C.C." on pages 586-7 of *The Builder* of November 19 last. To readers without knowledge of the facts, this article will give the entirely incorrect impression that the Council employs no architects in private practice in connection with its housing schemes. In fact, it has been the Council's practice for many years to allocate a number of schemes of block dwelling development to architects in private practice, and in the last three years the practice has been extended. In January, 1946, when the housing work of the Council was concentrated in the hands of the Director of Housing and Valuer, 11 private architects were employed on 17 schemes, but at present 48 architects are engaged on 61 schemes.

The increase in the staff of the Housing Architect's Division of the Council's Housing and Valuation Department is, as your article points out, made necessary to provide an organisation capable of preparing schemes for the larger programmes both of block dwellings and of cottages for 1949, and subsequently, but of the 7,000 flats forming part of the 1949 programme, about 3,000 are included in schemes for which private architects are responsible. In addition, a further 4,000 flats in schemes allocated to private architects are scheduled for inclusion in subsequent programmes.

From these facts it will be evident that the Council is making full use in its post-war housing drive of the services of architects in private practice to supplement the efforts of its own staff architects.

C. W. GIBSON.
Chairman, Housing Committee, L.C.C.
County Hall, S.E.

Architects' Benevolent Society.

TO THE EDITOR OF *The Builder*.

SIR,—I am appealing to you this Christmas on behalf of this Society, which helps architects and architects' assistants and their families when in need. Though we cannot disclose their stories, many sad cases come before us during the year. If every member of the profession contributed even a small sum, we should be able to give really adequate help where it is needed.

Will you look upon this letter as a personal appeal to you, and send me half-a-crown, or more if you can, as a Christmas gift to help those in distress. So may your New Year be happy in the knowledge that you have helped others.

MICHAEL WATERHOUSE,
President, A.B.S.
66, Portland-place, W.1.

"The Backs," Cambridge.

TO THE EDITOR OF *The Builder*.

SIR,—It is with the greatest perturbation that the writer reads in your issue of November 19 of the threat to "The Backs." This part of Cambridge is surely one of the finest examples of planning, as well as of civic architecture and landscape design, in the whole world and is regarded as such by persons of sensibility everywhere. Nothing could be more unfortunate than to make Queens Road into a trunk road. Already the land lying to the west of Queens Road is part and parcel of a precinct formed by the Colleges and the extension of Clare, not to mention the new Library being planned on the west side.

While the writer agrees that something should be done to ease the traffic problem in Cambridge, it would surely be more reasonable to construct a new trunk road free and unencumbered by buildings on a site outside the town, drawing all through traffic as well as preserving intact a masterpiece of design.

B. A. P. WINTON LEWIS, Dip. Arch.
12, City-road, E.C.1.

Cost Variation Clauses.

TO THE EDITOR OF *The Builder*.

SIR,—One of your correspondents has suggested recently that the list of materials whose prices are subject to the "Fluctuations" clause in a contract should be limited to those estimated to cost, say, 10 per cent. or more of the contract sum, or that adjustment should be made only on those fluctuations in labour and materials which exceed, say, 10 per cent. of the basic rates.

While this solution may be satisfactory on housing and similar work, it is very doubtful if, in a contract of any magnitude and complexity, involving the work of several sub-contractors, any materials would exceed even five per cent. of the contract sum, although increases in their cost might place a heavy financial burden upon the contractor if he were not to be reimbursed.

It would seem to be a simpler solution to the problem if the architect and/or quantity surveyor prepared the list of materials *and* inserted the basic prices for them, limiting the operation of the "Fluctuations" clause to those items. Variations in rates of labour should, of course, also be adjusted.

By this means the list of materials could be kept within reasonable limits, and all contractors would estimate on identical basic prices for the chief materials.

E. DENIS KNIGHT.
Brighton, Sussex.

Conversion Tables for Copper Pipe.

TO THE EDITOR OF *The Builder*.

SIR,—I have been following with close interest the various articles by "Cain" in your journal, especially those in connection with plumbing. With reference to his remarks in connection with his difficulty in arriving at the cost per foot run of copper tubing in your issue of November 19, and his suggestion that the Copper Development Association or one of the pipe manufacturers should publish a "ready reckoner" or set of conversion tables, giving diameter, gauge, price per lb. and cost per foot run, I would like to draw Mr. V. C. Abell's attention to "O'Toole's" Tables (issued 1908), which I consider has anticipated what he has in mind by 40 years.

I wish to express to *The Builder* and to Mr. Abell my warm appreciation for these very helpful and informative "Price Build-up" articles, which no doubt are greatly welcomed by all branches of the building industry.

JOHN CUMMING.
Upper Queen-street, Belfast.

Man Hours Per House.

TO THE EDITOR OF *The Builder*.

SIR,—It was with interest that I read in your issue of November 19 the efforts of a big and well-established firm of building contractors who boast of building one house per day. This, according to their own figures, and my assumption that by a working day they mean one of 8½ hours, means that they have been producing one house with a labour force of 800 men in 6,800 hours.

They claim this as their average time per house for almost 3 years, and now they point out that an average of 2 1-5 houses are erected each working day. With the same labour force this amounts to 3,090 man-hours.

Now I would like to draw a comparison with the efforts of our small firm of father and two sons, who are all working tradesmen without any office staff.

We have recently built two pairs of semi-detached houses, each house with a floor space of 1,000 sq. ft., with an average labour force of 7 men in 10 months, from start to completion. This gives an average of 10 weeks of 46½ hours per week, per house—a total of 3,255 hours per house.

This figure is not one of which we are particularly proud as we consider it would have been much less had we had less difficulty in obtaining suitable bricklayers. We had one man who was over 65 years of age, and two Government trainees who came to us direct from the training centre, obviously without any site training.

No doubt many other builders could verify my statement that 3,000 man-hours is more than enough for the average house, where they are in groups on the same estate.

E. ANTHISTLE, JUNIOR.
Knutsford, Cheshire.

Banister Fletcher's "History of Architecture."

TO THE EDITOR OF *The Builder*.

SIR,—May I draw your attention to a slight inaccuracy in the review (your issue for November 5) of the fourteenth edition of Sir Banister Fletcher's "History of Architecture on the Comparative Method" where it is stated that ". . . the American examples contain no illustration of, or reference to, the work of such men as Frank Lloyd Wright."

It will be appreciated that in a work covering so wide a field, it was only possible to include a limited selection of illustrations of the work of leading modern architects, but it is only fair to record that the author refers to Frank Lloyd Wright on page 877, where his domestic architecture is described as "forceful and picturesque, as seen in his own house at Spring Green, Wis., and in a number of other buildings."

W. HANNEFORD-SMITH,
Director, B. T. Batsford, Ltd.
15, North Audley-street, W.1.

Town and Country Planning Act.

TO THE EDITOR OF *The Builder*.

SIR,—As building contractors, we have for many years invested our reserve funds in good-class building sites, thus forming a work reserve in case of a hiatus in contract work. Now it seems that we shall be asked to agree that a rhododendron-covered site, worth at least £1,500 in 1947, being without user, has only a nominal value of, say, £10, with a claim against the Global Fund payable in years to come, in some stock, at some interest. But even this does not seem to be certain, for we gather that after convincing the district valuer of its value, there is no certainty that that amount will be paid, for if the admitted claims are £900m., instead of £300m., then claims will only be met as to one-third. We say that this land is our legitimate stock-in-trade and such action is robbery, resulting in crippling house-building and dearer houses.

How did all this happen without protest, and what is the best procedure for building firms to adopt?

WHITELOCK AND CO., LTD.
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A New Form of Architectural Education

Mr. Gordon Brown's Address to the A.A.

THE meeting of the Architectural Association, held on November 24, attracted a large audience, including the President of the Royal Institute of British Architects and several representatives of schools of building. Mr. R. E. Enthoven, F.R.I.B.A., President of the Architectural Association, was in the chair, and, when the formal business was concluded, introduced MR. GORDON BROWN, A.R.I.B.A., Principal of the A.A. School, whose talk was entitled "A New Form of Architectural Education."

Mr. Brown said his paper was a personal expression of opinion, not the announcement of an A.A. policy. He wished to show there was a need for a new form of architectural education, something which could not be achieved by the schools alone but requiring action by the profession as a whole. As now conducted there was a confusion of aims in architectural education: in most schools the curriculum was crowded, and yet there was a constant demand for the inclusion of new subjects. After briefly reviewing the history of the Architectural Association during the past fifty years he continued by saying that cultivation in matters of design was something about which most primary and secondary schools did very little, but this stage of education was as important to the future architect as any other. The profession suffered from the lack of an over-all plan of education. An endeavour was made to cover too much ground and the problem should be examined in detail now. The Architectural Association had a great opportunity and a great responsibility in that it was in the unique position of being able to set about the establishment of a new form once it decided to do so. The precedent it would set would break the present stereotyped form and give a lead to other schools, and he was certain that any attempt to improve the standards and technique of architectural education would receive the encouragement of the Royal Institute. In the past the aim of the Architectural Association had been the cultivation of the individual capacity of the student, so that on completing the course and gaining some practical experience he might be able to make his contribution to architecture. In achieving its educational aim the Association held that particular attention should be paid to creative ability, logical thinking, technical sense, administrative ability and power of self-expression. That was the aim: the standard to achieve was a more controversial issue. At present the standards aimed at in most schools, including that of the A.A., were all closely related to the Beaux Arts system. But now the Beaux Arts idea of the big subject as an end in itself had been given up, the big subject should itself be scrapped, and the opportunity taken to allow students to complete designs for smaller buildings of good quality. Better work would result from this, and there would be a basis on which general ability could be judged. The retention of a limited number of large subjects as exercises in imagination and analysis would be excellent.

Turning to another branch of his subject Mr. Brown said environment played a very important part in the development of the young architect; but environment was not effective unless one had the opportunity to gain by it. In London there were ballet, music and many other valuable educational influences; but for financial reasons these were not available to most architectural students to-day. Students who could not afford to go to ballets and concerts could not find the money to go into the country, but the architectural student ought not to be trained in an entirely urban environment; a country school should be established as part of the A.A. This would ensure that the student had the advantage of living in and understanding a piece of landscape, as well as of studying the social and building conditions of rural areas. Another matter was office experience: every student should be attached to an office on the same day as he started at the A.A. The student should be bound to give a month's work in every year to that office without payment, and in return he should have access to the office at all times and to the jobs in course of construction. In the first two years he would be a liability but after that he would be an increasing asset.

Contact with other arts was also a matter that came with environment; if the proposed country school was established by the Architectural Association in conjunction with the Royal College of Art and perhaps one or two other London schools, architectural students would get to know the points of view of those engaged in other arts. A grouping of London's great design schools in some place where they could work together for at least a part of the year, while retaining their London location, was necessary and, indeed, would come about within the next twenty-five years. Foreign study was an important aspect of the student's environment. Schools and tours should be organised abroad as soon as there was opportunity. Schools were better than tours. Foreign teachers were also important, and one of the most stimulating factors at the A.A. had been the number of foreign architects who had taken the opportunity to lecture there whilst passing through London. Many of the controversies of the last decade had arisen over method in architectural education, but it was only one factor in the general form, and anyone who advocated a method should advance some detail regarding its application.

Of workshop and practical training Mr. Brown said that as the schools had tended to become divorced from office and building work, the demand for increased workshop and practical training had grown. This was needed if architects were to understand better the nature of materials. Only a part of the object of the architectural school could be achieved in the school itself; parallel studies with industrial designers, machine shops and manufacturers must play a large part.

Few people who advocated the workshop method considered the time factor, but if the method was worth adopting the student must be allowed a considerable time to pursue this branch of his studies. Even now, time presented a most difficult problem. The present scheme was five years. National service was eighteen months. The Planning Course, which about half the students wished to take, was, he understood, to be extended to two years. Add a year's experience in architecture and another in town planning, and the student would be at least twenty-eight when he qualified. Few students could afford to spend this length of time. The schools tried to do too much.

Mr. Brown proposed a new method of control for the A.A. school. The office holders should sit not only with their particular responsibilities of finance and so on but as Governors of the school without departmental responsibilities. The yearly retirement of the President would ensure one new officer being appointed annually and this was a reasonable rate of change. Students should have a consultant's part in their own education.

Discussion.

MR. F. BRAY (Under-Secretary of the Ministry of Education) said one of the things needed in a school of architecture was enthusiasm, and Mr. Gordon Brown had this to a degree that had thrilled his audience. Many architects were wondering when the large colleges of technology would be put up. The Investment Committee had been persuaded to allow the spending of £50,000,000 on technical buildings, and a good deal of that would be spent on schools. We needed the finest buildings possible to train young people, and we relied on architects to see that we got the best buildings for the money.

MR. RALPH TUBBS said that in approaching the question of the reform of architectural education, one might either make an analysis of existing curricula or examine the architecture being built, noting its failings and considering how to adjust education in such a way that architects in future would do better. One of the things wrong with present-day architecture was that it was designed too intellectually. Even with students not enough thought was given to its emotional aspect. Mr. Brown's suggestion that students should do smaller work was a good one, because the smaller design gave a chance for the student really to feel its emotional qualities. One could make drawings which produced an emotional response because of line, colour, and so on, without these qualities being inherent in the design itself. The student should realise throughout that his final aim was architecture. One of the greatest failures of contemporary buildings was their poor weathering quality. This subject was not fully considered by students.

MR. MICHAEL WATERHOUSE, P.R.I.B.A., said the idea of a country school was an excellent one. Environment was needed more than anything else: nobody could be a good architect unless he knew the manners, customs, thoughts and habits of different parts of the country. If the A.A. could do anything to further that idea he would do everything he possibly could to help. He would say the same about contact with the other arts. That was a thing of which he knew the personal value because when a student he had gone to the Slade and learned a great deal there. Mr. Brown's outline for a more permanent constitution for the A.A. school was admirable. When speaking about town planning a month ago, he (Mr. Waterhouse) had not meant that this should be part of the five-year course: he had suggested a post-graduate course. This might be taken in the evening school by the practising architect. Many architectural students, on finishing their training, found themselves in a difficulty about earning their living. The practice of architecture was closely allied with engineering, and many architects had to employ the consulting engineer to do work they could not themselves do. The young architect, if temporarily unemployed, might seek work as draughtsman in the office of a consulting engineer, and there

he could learn the rudiments of engineering.

MR. JOHN WALKDEN, of the Regent-street Polytechnic, said that architectural schools were putting their fingers into too many pies. Town planning and industrial design should be allowed to go to the people who had trained for them. Mr. Brown had mentioned that in the schools the subjects selected were getting bigger and bigger: the sooner they were cut down to smaller subjects which could be handled and rounded off the better it would be. As to practical experience to be gained in the country his own school had a useful scheme. In conjunction with the youth hostel a scheme had been run whereby the students had put roofs on to derelict barns, turning these into hostels. If more practical problems of that nature could be obtained, it might be possible for students to move into the country if only for the holiday period.

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M.o.W. Travelling Exhibition.

The M.o.W. Travelling Exhibition at Lambeth Bridge House, which was to have closed on November 30, is to remain open until December 10 (week-days only, 10 a.m. to 5.30 p.m.).

£14M. PLAN FOR LONDON COUNTY COLLEGES

THE L.C.C has prepared a plan for submission to the Minister of Education showing the provision to be made by the Council for county colleges in London. The plan proposes that the new colleges shall be erected in the following localities, each on a site of two acres, which, where necessary, shall be acquired or extended for the purpose:—Battersea, Bermondsey, Bethnal Green, Brixton, Chelsea, Clapham, Clapton, Dalston, Deptford, Dulwich, Eltham, Fulham, Greenwich, Hither Green, Holloway, Islington, Kennington, Kensington, Kentish Town, King's Cross, Lewisham, Marylebone, Peckham, Poplar, Putney, Roehampton, Southwark, Stepney, Stoke Newington, Streatham, Tooting, Wandsworth and Woolwich.

The plan submitted involves building work on a large scale, and it is anticipated that if the colleges are required within a minimum period of, say, five years, the Council will be compelled to build at a greater speed than it has ever attained before. If sites, materials and labour were all available the estimated staff required for the simultaneous building of 34 colleges would be 34, rising to 250 over a period of two years and falling to 100 until the completion of the work. The equivalent of about 3,000 building operatives would be required for a period of three years.

The cost of acquiring land and buildings in the 34 localities will be about £1,000,000 and the cost of building a typical college will be approximately £326,000, a cost that would naturally vary according to site conditions. For purposes of furnishing estimates the Council has accepted a figure on the scale of that required for a technical college—about £60,000 for each college. The total cost of the plan is estimated at £14,000,000, with annual maintenance of £1,950,000.

IN PARLIAMENT

U.S. Timber Offer.

MR. BOSSOM asked the President of the Board of Trade why the U.S. offer, made in the early part of this year, to provide our builders with the timber for 10,000 houses without payment for five or six years, was refused by his department.

MR. BOTTOMLEY said that acceptance of the offer referred to would merely have established an eventual dollar liability.

Mining Areas.

MR. BOARDMAN asked the Minister of Health what liaison there was between his department and those of Fuel and Power and Town and Country Planning in connection with the siting of houses in mining areas.

MR. BEVAN said headquarters and regional committees of representatives of all the Government departments concerned and the National Coal Board were set up early last year to consider any questions arising in connection with the provision of houses for miners.

Building Bye-laws.

MR. HASTINGS asked the Minister of Health whether he was aware that the War Damage Commission was only prepared to replace damaged structures as they previously existed and not in accordance with modern bye-laws; and whether in approved cases when severe hardship would otherwise be inflicted he was prepared to waive such bye-laws.

MR. BEVAN said if work, in addition to mere replacement for which the War Damage Commission were in a position to pay, was necessary to ensure compliance with the building bye-laws, he was ready, on application from the local authority concerned, to consider relaxation of the bye-laws under the provisions of Section 63 of the Public Health Act, 1936.

INCREASE IN BUILDING

MINISTER AT ROOFING CONTRACTORS' DINNER

WHILE the Ministry of Works had given approval to building work equal to £58m. during August, 1947, and the figure had fallen to £39m. in January of this year as a result of capital cuts, the figure for September was £62m., said MR. CHARLES KEY, M.P., Minister of Works, who addressed members of the National Federation of Roofing Contractors at their annual dinner and dance at Grosvenor House, London, on November 24. He expressed his gratitude for the work the Federation had carried out during the war, and said that the task before the building industry was of supreme importance to the social and cultural welfare of the people.

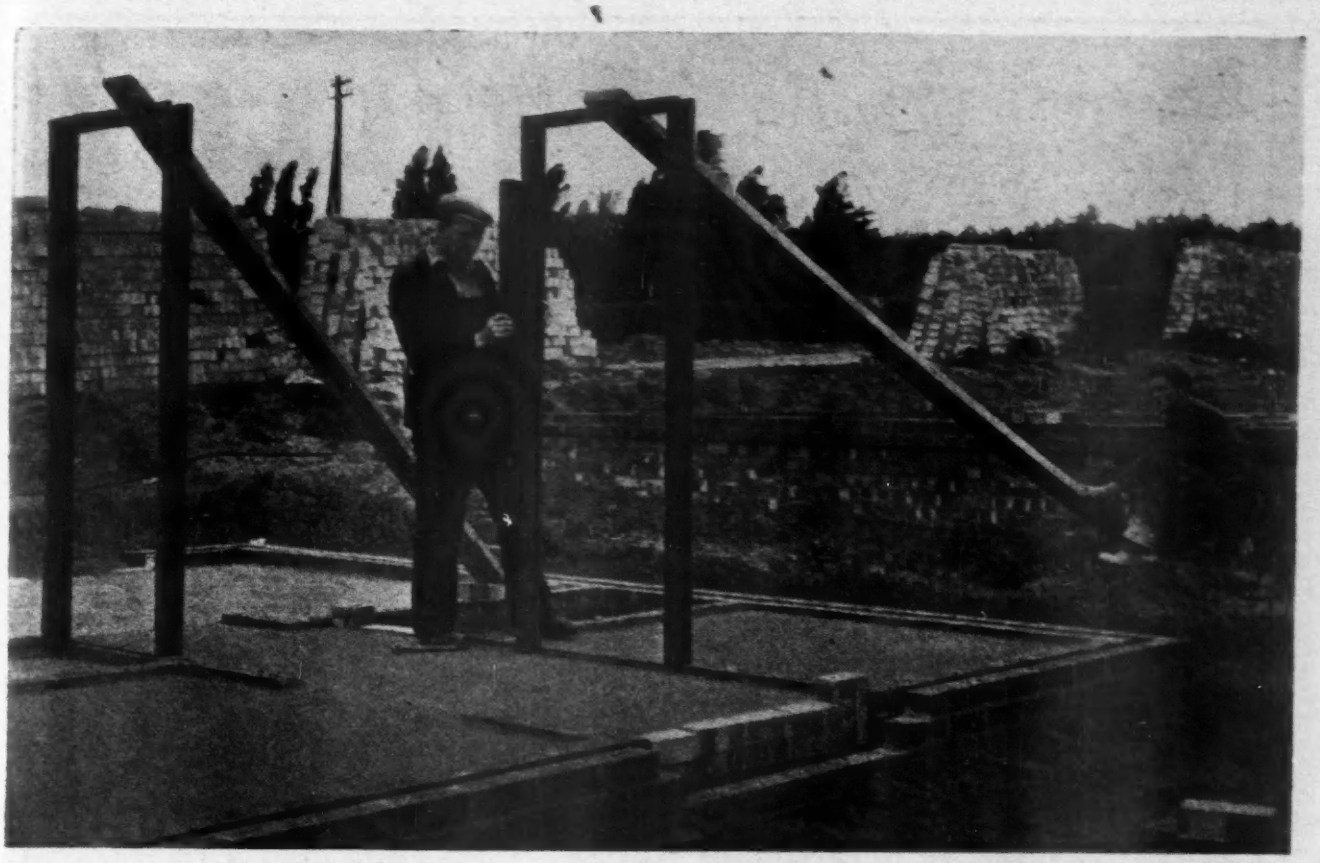
Mr. Key went on to say that houses which previously took fifteen months to complete were now being completed in eleven months. The Advisory Council he set up last December had already put forward a number of projects which would increase the efficiency of the building industry. These included new materials for constructing and covering floors, and experimental houses to get information about better methods.

The slate industry was of very material importance to the housing of the country, he said, for while new materials could be used for new buildings, existing slate roofs required a constant flow for maintenance. Slate quarries had increased production during the last year, and though there was anxiety at the continued mounting stocks he hoped that the recent relaxation of restrictions would be beneficial to the industry.

MR. E. H. SMITH, the retiring president, in his reply to the toast of the Federation given by MR. P. H. LINCOLN, C.B., told members that he had recently returned from a visit to Africa. He was sorry to see that so many craftsmen were leaving England and going to that country. He had asked many of these people why they were going and they had replied that they were frustrated after years of building experience. These people could build houses if the Government would let them. While he regretted this exodus of craftsmen he felt that we should help the Union. We had to export many materials to Africa, for she was building so fast that she even had to import cement, although she was exporting it before the war.

MR. P. C. FORD, vice-president of the Federation, who gave the toast of the guests, said that it was largely due to the Ministry of Works that the Federation was in existence, for it had been formed during the war by the amalgamation of the National Federation of Slaters' Merchants, Slaters and Tilers and the London Association of Master Slaters and Tilers, at the request of the Ministry, who wanted one voice to represent the roofing contractors.

During the evening a presentation of a canteen of cutlery was made to Mr. E. H. Smith, in appreciation of his work, by MR. F. E. ASHFORD, the immediate past-president.



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THE L.C.C has prepared a plan for submission to the Minister of Education showing the provision to be made by the Council for county colleges in London. The plan proposes that the new colleges shall be erected in the following localities, each on a site of two acres, which, where necessary, shall be acquired or extended for the purpose:—Battersea, Bermondsey, Bethnal Green, Brixton, Chelsea, Clapham, Clapton, Dalston, Deptford, Dulwich, Eltham, Fulham, Greenwich, Hither Green, Holloway, Islington, Kennington, Kensington, Kentish Town, King's Cross, Lewisham, Marylebone, Peckham, Poplar, Putney, Roehampton, Southwark, Stepney, Stoke Newington, Streatham, Tooting, Wandsworth and Woolwich.

The plan submitted involves building work on a large scale, and it is anticipated that if the colleges are required within a minimum period of, say, five years, the Council will be compelled to build at a greater speed than it has ever attained before. If sites, materials and labour were all available the estimated staff required for the simultaneous building of 34 colleges would be 34, rising to 250 over a period of two years and falling to 100 until the completion of the work. The equivalent of about 3,000 building operatives would be required for a period of three years.

The cost of acquiring land and buildings in the 34 localities will be about £1,000,000 and the cost of building a typical college will be approximately £326,000, a cost that would naturally vary according to site conditions. For purposes of furnishing estimates the Council has accepted a figure on the scale of that required for a technical college—about £60,000 for each college. The total cost of the plan is estimated at £14,000,000, with annual maintenance of £1,950,000.

IN PARLIAMENT

U.S. Timber Offer.

MR. BOSSOM asked the President of the Board of Trade why the U.S. offer, made in the early part of this year, to provide our builders with the timber for 10,000 houses without payment for five or six years, was refused by his department.

MR. BOTTOMLEY said that acceptance of the offer referred to would merely have established an eventual dollar liability.

Mining Areas.

MR. BOARDMAN asked the Minister of Health what liaison there was between his department and those of Fuel and Power and Town and Country Planning in connection with the siting of houses in mining areas.

MR. BEVAN said headquarters and regional committees of representatives of all the Government departments concerned and the National Coal Board were set up early last year to consider any questions arising in connection with the provision of houses for miners.

Building Bye-laws.

MR. HASTINGS asked the Minister of Health whether he was aware that the War Damage Commission was only prepared to replace damaged structures as they previously existed and not in accordance with modern bye-laws; and whether in approved cases when severe hardship would otherwise be inflicted he was prepared to waive such bye-laws.

MR. BEVAN said if work, in addition to mere replacement for which the War Damage Commission were in a position to pay, was necessary to ensure compliance with the building bye-laws, he was ready, on application from the local authority concerned, to consider relaxation of the bye-laws under the provisions of Section 63 of the Public Health Act, 1936.

INCREASE IN BUILDING

MINISTER AT ROOFING CONTRACTORS' DINNER

WHILE the Ministry of Works had given approval to building work equal to £58m. during August, 1947, and the figure had fallen to £39m. in January of this year as a result of capital cuts, the figure for September was £62m., said MR. CHARLES KEY, M.P., Minister of Works, who addressed members of the National Federation of Roofing Contractors at their annual dinner and dance at Grosvenor House, London, on November 24. He expressed his gratitude for the work the Federation had carried out during the war, and said that the task before the building industry was of supreme importance to the social and cultural welfare of the people.

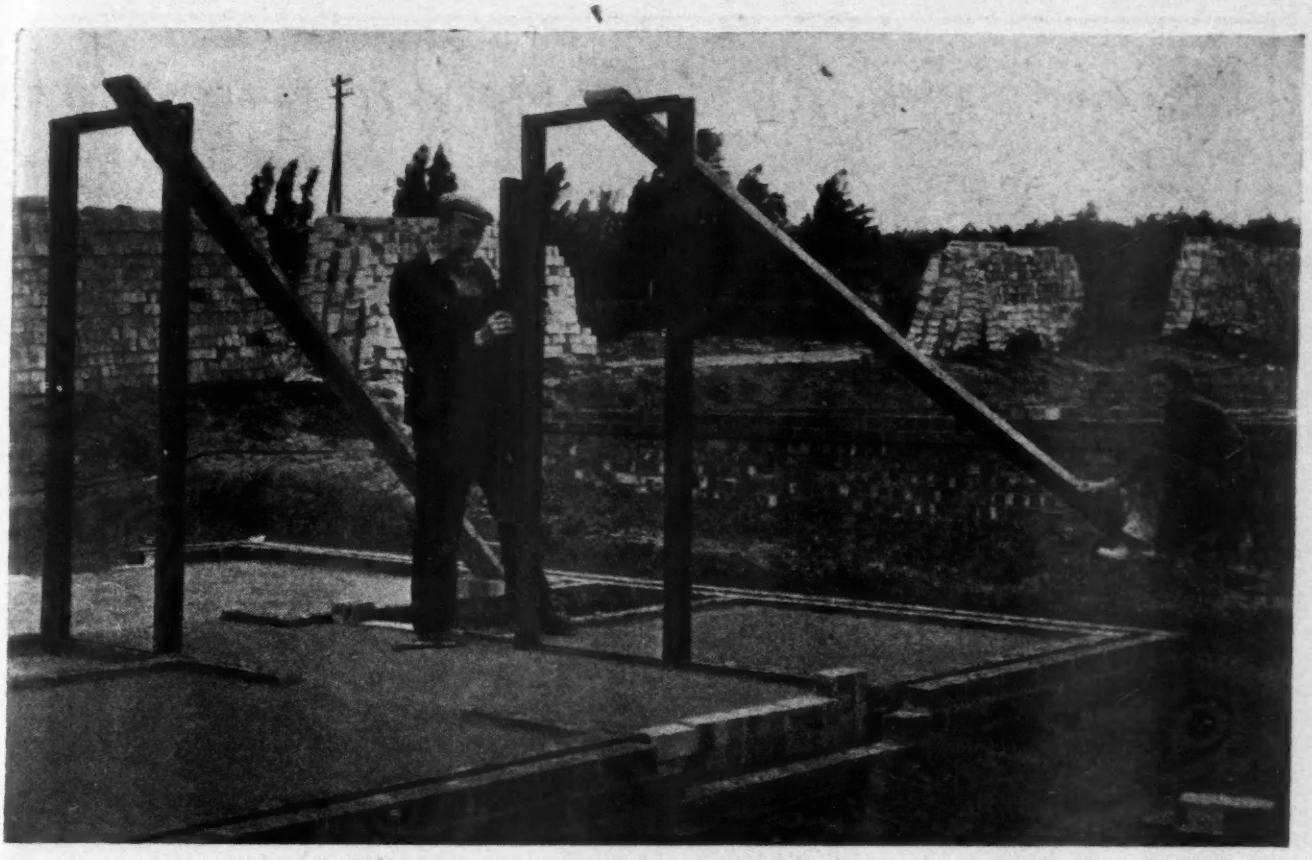
Mr. Key went on to say that houses which previously took fifteen months to complete were now being completed in eleven months. The Advisory Council he set up last December had already put forward a number of projects which would increase the efficiency of the building industry. These included new materials for constructing and covering floors, and experimental houses to get information about better methods.

The slate industry was of very material importance to the housing of the country, he said, for while new materials could be used for new buildings, existing slate roofs required a constant flow for maintenance. Slate quarries had increased production during the last year, and though there was anxiety at the continued mounting stocks he hoped that the recent relaxation of restrictions would be beneficial to the industry.

MR. E. H. SMITH, the retiring president, in his reply to the toast of the Federation given by MR. P. H. LINCOLN, C.B., told members that he had recently returned from a visit to Africa. He was sorry to see that so many craftsmen were leaving England and going to that country. He had asked many of these people why they were going and they had replied that they were frustrated after years of building experience. These people could build houses if the Government would let them. While he regretted this exodus of craftsmen he felt that we should help the Union. We had to export many materials to Africa, for she was building so fast that she even had to import cement, although she was exporting it before the war.

MR. P. C. FORD, vice-president of the Federation, who gave the toast of the guests, said that it was largely due to the Ministry of Works that the Federation was in existence, for it had been formed during the war by the amalgamation of the National Federation of Slaters' Merchants, Slaters and Tilers and the London Association of Master Slaters and Tilers, at the request of the Ministry, who wanted one voice to represent the roofing contractors.

During the evening a presentation of a canteen of cutlery was made to Mr. E. H. Smith, in appreciation of his work, by MR. F. E. ASHFORD, the immediate past-president.



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RECENT DEVELOPMENTS IN PRESTRESSED CONCRETE

Architectural Science Board Lecture

SOME recent developments in the prestressing of concrete were described by MR. L. W. ELLIOTT, A.R.I.B.A., A.M.I.C.E., A.M.I.Struct.E., when he addressed a recent meeting of R.I.B.A. Architectural Science Board. Mr. M. Hartland Thomas, F.R.I.B.A. was in the chair.

Following is a summary of Mr. Elliott's remarks:—

Concrete is especially suitable for prestressing, especially when its characteristic features are considered. It is able to take compressive stress, but its resistance to shear and tensile stress is not high enough to compete with the compressive stress and requires special shear and tension reinforcement. Furthermore, with precast concrete elements, excessive cracking may occur if they are strained whilst being transported to a building site contrary to the conditions intended. This is due to the limited resilience of ordinary reinforced concrete, as considerable permanent deformation occurs under excessive load conditions. Thus sometimes in an emergency when a reinforced concrete structure is stressed in excess of its working load, permanent deformation of such magnitude may occur that the structure becomes unfit for further use.

I have mentioned these points to show that the properties of concrete could be greatly improved by prestressing, which can be carried out by a number of methods, with two principal methods, namely, pre-tensioning and post-tensioning.

In the case of pre-tensioning the reinforcement is tensioned and consequently stretched by suitable jacking devices and held until the concrete is introduced to surround the wires. After the concrete has attained sufficient strength the wires are released and attempt to return to their original length, thus transferring the load contained in them to the surrounding concrete. The wires are held by special end plates or simply by the change of shape occurring in the wire, as when the wire is stretched its cross sectional area is reduced and the concrete surrounds it and by shrinkage bonds itself to the wire. When the wires are released they attempt to return to their original shape, but this can only occur at the ends, thus making a conical wedge. Post-tensioning is carried out by loading the wires against the hardened concrete elements. These wires are either contained within, or externally to, the hardened concrete.

From the early days of reinforced concrete, prestressing has been employed, although with little success until recent years.

The name of the person to whom chief credit must go for prestressed concrete is de Freyssinet, who, in 1928, used a very high-strength steel, allowing a higher measure of pre-tensioning to enable a substantial portion of stress to be made available, after shrinkage, to exert permanent compression on the concrete section. De Freyssinet's ideas were further developed in Germany by Hoyer, who, in 1938, introduced a super high-strength piano wire and suggested the manufacture of units in a continuous run, thus avoiding a large number of jacking devices. Development, up to now, has been to a certain extent restricted because of the patent position, but the patent relating to the principle of prestressing concrete by pre- and post-tensioning has now lapsed in this country and the current patents only apply to methods of application. The post-tensioning patent is still operative on the Continent.

I should like now to explain the present-day basis of design in prestressed concrete. Firstly, it is important to use the highest possible quality steel, with an ultimate tensile stress of between 100/120 tons/sq. in. Secondly, the concrete must be high grade with an average cube strength at 28 days of 9,000 lb. These high strengths are necessary to overcome the following losses: firstly, the elastic shortening of the concrete; secondly, the shrinkage; and thirdly, creep. In design these factors are normally accounted for by stressing the steel initially up to three-quarters of its ultimate tensile strength but only allowing two-thirds of the ultimate tensile as available for design purposes.

The lecturer then showed a slide which illustrated the comparison between various structural elements. He continued:—In the case of the steel beam, the weight is 46 lb. per ft. In the second case, the prestressed concrete beam weighs 90 lb./ft. with a steel weight of only 3.2 lb. The stress diagrams show how the stresses are accounted for. It will be observed in this case that a certain amount of tensile resistance on the part of the concrete is permitted. The third beam is fully prestressed and weighs 120 lb./ft. with a steel weight of 3 lb.

In this case no tensile stress is imposed upon the concrete. The last case, of course, shows a steel beam as normally employed with a concrete casing with a total weight of 210 lb./ft. What is not shown is a normal reinforced concrete beam, which would use 15 lb. of steel per ft. and weigh 300 lb. with a depth of 24 in. The thin webs in these beams are possible because with prestressing the concrete's resistance to shear is considerably increased. Similar cases are shown for the small type of prestressed concrete joists suitable for housing compared with normal reinforced concrete. From the point of view of calculation, once the losses have been assessed by research the calculations are more direct and simple than with normal concrete design.

Research in this Country and Abroad.

Considerable research has been carried out in this country and abroad in order to arrive at some directives concerning the design of prestressed concrete. Germany, before the war, faced with necessary economy of steel, devoted considerable energy to research in order to establish the best design and production methods and to assess and minimise the losses, such as elasticity, creep and shrinkage. Attempts were also made to investigate the fire-resistance and the desirable factors of safety, both statically and for fatigue, and a draft Code of Practice was prepared. During the war most European countries, under the influence of Germany and with sparse steel supplies, were compelled to carry on a considerable amount of prestressed concrete work. Probably the most objective research carried out was done in Switzerland during 1941-45, and a number of conclusions were reached concerning the quality of the wire and the concrete.

It was found that, for a given type of wire, the anchoring in the concrete will be better the smaller the diameter, the higher the initial stressing, and the greater the compression strength of the concrete at the moment when the stress is released. The static loading tests carried out showed that, within the range of the working load, the beams behaved as if they were perfectly elastic. It was also found that prestressed concrete withstands fatigue in a remarkable manner and that, even in the case of fatigue stressing, the concrete possessed a bending tensile strength and tensile strength. The research furnished the basis on which methods of calculation should be made and specified the minimum cube compressive strengths for concrete and a water cement ratio of a minimum of 0.35, consolidated by means of high-frequency vibrations with a frequency of 6,000 per minute.

For self-bonding steel wires, the following requirements were laid down. Steel wires with smooth surfaces, a maximum diameter of 2 mm. For wires with rolled notches, a maximum permissible diameter of 6 mm. Twisted steel wires composed of 3/6 wires, a maximum permissible diameter of 3 mm. for each separate wire. It was also laid down that the following factors of safety should be adhered to: for static stressing, crack formation 1.5; rupture 2.5. With fatigue, crack formation 1.2; rupture 1.5. It will thus be seen that, as far as prestressing is concerned, as soon as cracks are formed the tensile stress of the concrete has been exceeded and the beam then goes on to fail in the same way as normal reinforced concrete.

The Swiss Government accept prestressed designs complying with their recommendations and in Sweden, too, standards have been laid down. It is now understood that in this country a draft Code of Practice has been submitted to the British Standards Institution for their consideration. The Ministry of Works are doing a certain amount of research into prestressed concrete and have promoted investigations into Continental developments.

The Method of Prestressing.

I shall now briefly describe the principal methods by which prestressing is carried out. Firstly, the methods of de Freyssinet in France. He employs both methods of prestressing, namely, pre-tensioning and post-tensioning. In the case of pre-tensioning, for small units, he usually stresses against the mould of the unit, and by providing seperate anchorages in the units. Perhaps the most interesting application by de Freyssinet is in the field of post-tensioning by means of a double-acting jack, the reaction of the prestress being taken by the concrete member. This system, in common with all post-tensioning systems, has the advantage that a certain amount of shrinkage which occurs in the concrete has already occurred before the stress is applied. De Freyssinet uses a cable which is cast in with the concrete, but is prevented from bonding by means of either a thin metal sheathing or by the use of tarred paper. At the ends of each cable are anchorage cones made of concrete and reinforced with wire wound into a spiral. The cable itself is composed of 12 or 18/5 mm. diameter wires, placed round a central spiral core of wire. The wires protrude from the end of the cone and are wedged to the double-acting jack. The jack, which is worked by a small hydraulic pump, tensions the wires as the first step, but when the desired

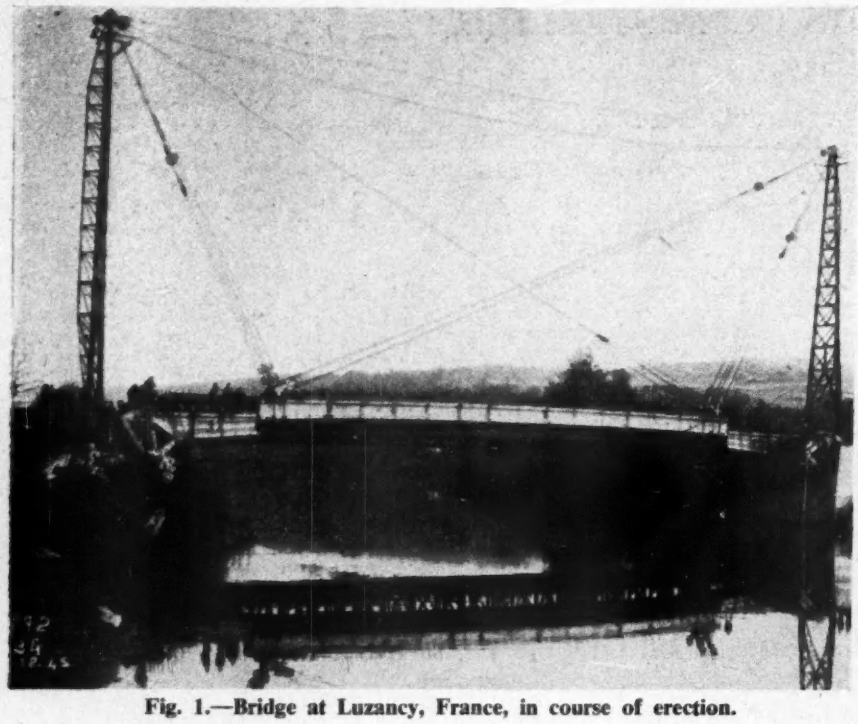

Fig. 1.—Bridge at Luzancy, France, in course of erection.

degree of tensioning has been achieved the second part of the jack forces in a male tapering cone between the wires and into the cast-in female cone. A hole is left in this cone to enable grout to be pumped into the wires to prevent corrosion.

In the case of Professor Magnel's system of post-stressing, the wires are wedged to steel plates, which are assembled one on top of the other and are generally referred to as sandwich plates. The wires are placed separately within the concrete member and occupy a considerably larger area of cross section as opposed to the Freyssinet method. This increase of area is naturally lost to the resistance of the member. The wires are only pre-tensioned two at a time, as opposed to the wires in the Freyssinet cable which are stressed simultaneously. There have been criticisms made to the effect that in prestressing the wires simultaneously there might be some difference in tension in individual wires, but in the Magnel system this does not occur as the wires are stressed in pairs. On the other hand, the Magnel sandwich plates which are cast into the concrete use a considerable amount of steel, thus detracting from the steel-saving value of prestressed concrete although, perhaps, there is no steel shortage in Belgium.

The other method of prestressing is that of Hoyer in Germany, who obtained a patent separately from de Freyssinet, but by his patent he was limited to using wires of a maximum diameter of 2.5 mm. The Hoyer method was to use a long bed for pre-tensioning and he relied entirely on the bond between the wire and the concrete for transferring the stress to the concrete. His method was a very practical one and enabled prestressing on a large scale to become possible. Naturally, a number of methods varying slightly from those of de Freyssinet and Hoyer have been developed, but the time does not permit of a complete description.

Structures Suitable for Prestressing.

I should like now to describe the broad types of structures for which prestressed concrete has been used.

Firstly, because concrete when pre-stressed is free of cracks, structures where it is important to prevent the egress of water are very much better designed in prestressed concrete. Examples of such structures are dams and pressure conduits for the delivery of water to turbines. De Freyssinet, in North Africa some years ago, erected a dam where the reinforcement was prestressed. Other structures of this type are storage tanks, silos, reservoirs and water towers. There has recently been erected a large reservoir in France for two and a half million gallons of water. When using normal reinforced concrete these tank types of structures are generally designed on the tensile load-carrying capacity of the reinforcement, as naturally, in view of the elongation of the reinforcement, no concrete tensile stress is permissible and the stress figure for reinforcement is therefore limited in order to prevent serious elongation. Even so, cracks do appear, and in many cases extensive waterproofing has to be carried out. The obvious solution is for the concrete to be made capable of carrying the tensile stress by means of prestressing.

Other examples of structures where water is a serious inconvenience are harbour works, especially jetties subject to impact by vessels. In the case of normal reinforced concrete, permanent deformation would enable salt water to corrode the reinforcement. The erosive action of the sea, due to the impact of waves, can in a similar manner sometimes limit the use of normal reinforced concrete for coastal defence. Prestressed concrete would be very useful for this branch of civil engineering.

Naturally, all types of pipework used for sewers and water supply are greatly improved by the use of prestressed concrete. De Freyssinet has evolved an elaborate system of factory production for pipes where it is possible to manufacture a complete pipe, cured in two hours, although this factory is not producing at the moment.

Secondly, prestressed concrete, in view of its resistance to fatigue in reversals of stress, is eminently suitable for such elements as railway sleepers and towers for transmission lines.

Transmission lines create reversed loading conditions in the towers owing to the wind forces and possible fracture of cables, and the usual material for the posts or towers has, in the past, been steel. Here again, prestressed concrete has produced an alternative with a considerable saving of steel. Other structures normally precast and subjected to reversals of stress are piles and large-scale precast elements of a size where serious stresses are caused due to transport and handling. As piles are normally subjected to a compressive load, it would appear uneconomical to prestress them, but it is usually necessary to increase the steel content to cope with the impact caused by driving and the reversals of stress due to handling. By prestressing, much smaller breakage losses occur.

In Sweden, at a factory visited personally, I saw the production and subsequent erection of factory girders. The large precast elements where transport and handling are serious factors, are girders for factories up to, say, 75 ft. long. In this case the cost was less than normal concrete due to the reduced transport.

It is possible in these long-span structures to design to a depth-span ratio of 1:18, as compared with a normal ratio of 1:10 up to 1:15 in the case of structural steel. This is a remarkable achievement and shows that in these cases prestressed concrete is not only a substitute but a better solution.

Structures Using Prestressing.

In France there is a very fine example of a bridge using post-tensioned concrete. (Figs. 1 and 2.) The units were precast and site-assembled by means of cables run in grooves and tensioned with the Freyssinet double-acting jack. The whole bridge was assembled as three structural units, two end cantilever elements and a central beam. An interesting point in the design is that the reinforcement was graded to give a greater weight of steel in the centre portion by means of the

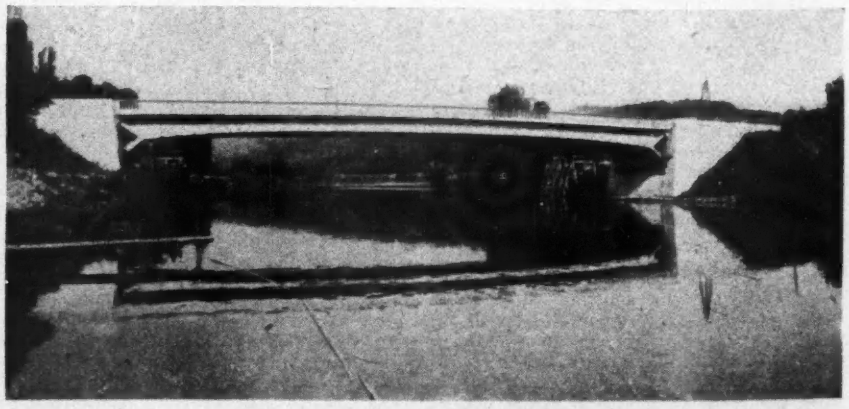

Fig. 2.—The bridge at Luzancy, completed.

cables being returned within the flange to the anchoring cones for prestressing. The joints were made with a stiff, dry cement mortar. This bridge has a particularly low ratio of span to depth, and this type of flat arch is only possible by the use of prestressed construction. The savings by factory precasting and the avoidance of shuttering enabled the bridge to be built at an economic cost with a very high standard of finish. Up to 400 similar bridges are now being built in France with spans up to 220 ft. with a maximum thickness at the crown of 2 ft. 10 in.

The bridge was designed by de Freyssinet, who claims that he designs æsthetically, without calculation and with approximate dimensions. It is then sent to the design office, where the detailed engineering calculations are made, and it is claimed that the design rarely differs from the original dimensions produced. In this country a bridge has been erected in Lincolnshire using the de Freyssinet methods.

In India the main hangar for the civil airport of Karachi consists of a prestressed reinforced concrete roof. The internal dimensions are 900 ft. by 130 ft. The roof spans the 130-ft. dimension and is carried on two independent prestressed reinforced concrete beams, each of 200-ft. span. Each arch shell is 2½ in. thick, spanning 35 ft. and stiffened at the edges with deep prestressed concrete ribs. The shell and ribs act together.

The stressing is carried out by the Freyssinet method with cables enclosed in a sheath to prevent bond. This hangar was designed in prestressed concrete because of the extreme shortage of steel in India during the war. It has been so successful that a further programme of hangars has been decided upon at Bombay, Delhi and Calcutta. I should like to add that the designs of this hangar and the bridge in Lincolnshire were prepared by the Prestressed Concrete Company, London, on the Freyssinet patents.

In Belgium two very interesting hangars have been built, using the post-stressing methods of Professor Magnel. The roofs of the hangars are made in hollow concrete slabs, 23 ft. long by 3 ft. 10 in. thick, supported by hollow concrete beams, spanning 170 ft. The post-stressing is obtained by 424 wires of 0.27 in. diameter, giving a total tensile force of 1,400 tons. These beams are precast on the ground and then erected by being jacked up the full height of the supporting columns. It is understood that this method of construction was adopted purely on price, as compared with competitive structural steel schemes. There is a reduced depth of the girders as compared with most other constructions. (Fig. 3.)

Whilst we are on the subject of airports, an experimental airstrip in prestressed concrete has been laid at Orly Airfield in France, designed to cope with the excessive impact loads from the landing of large aircraft. The present practice of building thicker and thicker airstrips, which in some cases are already 21 in. thick, cannot go on, and it is hoped that the use of prestressed concrete will be successful in order to effect considerable savings of material.

Owing to the saving of steel and concrete, use of prestressed concrete is to be urged forward, owing to the present difficult supply position regarding steel and timber. In the case of a 1,000 sq. ft. area house, the first floor normally uses over one-third of a standard of timber, and it would be reasonable to assume that if concrete could be substituted for the timber first floor of a house our timber supplies could be stretched still further, enabling more houses to be built. Ob-

Fig. 3.—Aircraft hangar near Brussels.

viously, it would not be feasible to provide normal concrete flooring as, apart from the weight, some 2 cwt. of scarce reinforcing steel would be used, and it would therefore be pointless to save timber at the expense of steel. If the floor were to be made of prestressed slabs or joists, it is quite possible to provide a greatly improved floor with only about 35 lb. of steel.

A great deal of experimental work has been going on in this country and the stage has now been reached where it is hoped that it will be possible to use prestressed concrete joists for a large number of houses next year. On the Continent the production of these small joists, together with a flooring slab known as the Schaefer slab, is carried out on mass-production lines. The Schaefer slab is extremely interesting, being a sandwich flooring composed of dense concrete skins with a centre core of lightweight concrete. The whole floor is cast in a continuous line by a machine and later cut into suitable sizes.

Another extremely interesting floor is being produced in Switzerland. It is a composite floor consisting of a factory-made element with an *in situ* cast portion. (Fig. 4.) The factory element consists of a plank made up of clay tiles specially moulded with grooves on the upper surface for the location of high-tensile steel wires. The process of manufacture consists of arranging the tiles end to end in a continuous line 240 ft. long and the wires are placed in the grooves and tensioned. The grooves are then filled with mortar, and after it has set the wires are released, thus prestressing the mortar and the clay tiles. This plank is then cut to lengths and used as the prestressed element of the tension zone of the floor, spaced apart by means of hollow blocks. *In situ* concrete is poured to form a series of tee beams, and by increasing the thickness of this concrete floors of varying spans are achieved. This is an extremely simple floor, requiring the minimum of factory-made elements with a constant low steel content. The cost of a floor in Switzerland is about 22s. per yard erected. The plank can also be used as a lintol with the brickwork acting as the compressive portion of the beam.

Other types of precast elements suitable for houses have been developed. At the same factory where the Schaefer slabs are made, various types of trusses have also been produced with an extremely low steel content. Whereas in most prestressed concrete designs only members subjected to compression and tensile stresses at the same time are prestressed, to eliminate the tensile stresses, in this case the prestressing is confined to the simple tension members with just sufficient initial compression put into the other members to enable the trusses to be handled with less risk of damage. In the example shown, the truss spans about 17 ft., and contains only from 4½ to 7 lb. of steel per truss. Unfortunately, I have no evidence to enable some comparison in cost to be made with the normal timber truss used for housing, although it would obviously depend on the production technique employed.

In France de Freyssinet is producing at a factory in Orleans prestressed beams suitable for housing, where the prestressing is taken by the mould. Thus, after the concrete has been cast, the whole unit can be transported to steam curing kilns after pressure has been applied to get rid of the excess water in the concrete. After a period of two hours it is possible to remove the element from the mould, thus ensuring the maximum production with the smallest capital. (Fig. 5.)

Conclusion.

In conclusion, I should like to enumerate the following points: prestressing without doubt leads to very great economy in materials, especially steel, but, at the moment, this does not mean necessarily that the cost is lower than normal reinforced concrete work, because high-quality materials are necessary, together with good production control. Capital

Fig. 4.—The Stahlton floor, Switzerland.

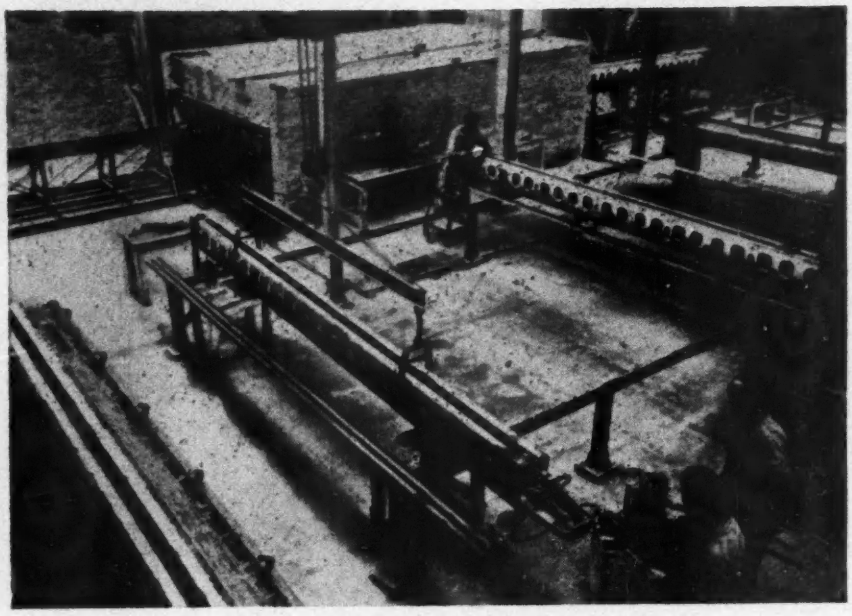

Fig. 5.—Beams being cast in a factory at Orleans.

expenditure is also necessary to a varying degree, depending on the system and the production scale. Further, although the steel used is from one-third to one-fifth of the quantity normally used for reinforced concrete, the cost of this special steel is as much as four times as high as mild steel. To-day, however, in view of the real need for economy of steel and concrete, the use of prestressing should be given every support. Unfortunately, although the Government is extremely aware of the economies the production of the high-quality steel is limited, so that would-be developers are warned to inquire fully into the steel position before embarking on production.

On the other hand, I think it necessary to urge the greater production of suitable steel, as in future structures I can envisage a greater use of prestressed concrete as opposed to normal concrete methods, with structures either wholly or partially prestressed. Normal concrete will, of course, always be suitable for certain parts of structures, such as foundations and axially-loaded columns. Already Dr. Mautner has designed a prestressed building frame on which tests have been carried out proving its efficiency for multi-storey structures.

With prestressed concrete, we can look forward to its use where normally reinforced concrete has not been satisfactory, such as large-span girders, bridges with little headroom, and all forms of water-bearing structures. Owing to the transport and handling position, precast concrete products will be more satisfactorily designed in prestressed concrete. There exists a real need for suitable lightweight precast flooring and roofing elements, using very little steel, for housing and schools, and the solution might be to use prestressed concrete in conjunction with lightweight concrete.

From the planning point of view the use of prestressed concrete will have a great effect, as a reduced number of columns will be necessary with less weight of structure due to the reduction in the size of individual members. It does appear that in the same way as welded steel construction is more economical and will gradually supersede riveted construction, prestressed concrete will supersede normal reinforced concrete to a large degree. This is all to the good because I do not feel that we can ever look forward to the time when, as before the war, steel could be used in a very wasteful manner. Even now there is evidence that outmoded methods of design and fabrication are limiting the building programme.

I have mentioned in the course of this paper several examples of prestressing where a reduction in costs over normal work has been achieved. I consider it possible to compete with all forms of reinforced concrete structures, given suitable production facilites. It is always extremely interesting to note that during the transition from one structural form to another, costs have not tended to become lower although there is usually a reduction in the amount of material used. This is clearly shown in the case of welded steel construction where, although there is a considerable saving in material, there is seldom a reduction in cost. This is a factor which should be thoroughly investigated and it might possibly be due to the fact that architects and authorities do not adopt new methods as quickly as they should, because it is only by the greater use of new methods that the production costs will be brought down.

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M-W.50

Discussion.

MR. EWING (Ministry of Works) said the Ministry's interest in prestressed concrete sprang, he thought, from three factors. The first was the obvious saving in scarce materials, particularly steel, timber and cement. Secondly, the Government believed, on advice—and this had just been largely substantiated by Mr. Elliott—that in various ways prestressed concrete was better than other building materials, particularly ordinary reinforced concrete, and for certain operations better than structural steel. Thirdly, they believed prestressed concrete should lead to savings in cost. There were already indications that prestressed concrete would prove to be worth while from a cost point of view in certain applications, and would help to reduce the cost of building.

MR. D. DEX HARRISON, A.R.I.B.A., said when precasting concrete for prefabrication had been studied some years ago the following words had been written down: "Concrete lacks certain of the advantages of steel and timber for prefabrication. It is heavy and bulky in relation to its cost, and it is brittle—all factors militating against its successful transport over long distances." So far as precast concrete went, those were the three main considerations that had to be faced. It now seemed that prestressed concrete ameliorated all three disadvantages.

There was one other defect of precast concrete he would like to hear a little more about in relation to prestressing, and that was the loss of continuity of structure. He believed the Ministry of Works had produced pieces of piano wire covered by an inch or so of concrete which had then been prestressed to produce an element that could be inserted in the member in such a way as to stick out at the end and give a little extra piece of concrete or reinforcement which could then be built in with *in situ* work and carry the prestressing through. He would like Mr. Elliott's confirmation of this.

One other difficulty was where the members were on a curve. Could wire be prestressed on a curve? He thought that if pulled out it would straighten itself.

MR. J. S. HARTLEY, A.R.I.B.A., asked whether holes could be knocked arbitrarily in the centre of small beams suitable for use in domestic building, as with timber or the drilling of steel, for the passage of conduits.

MR. A. F. HARE, A.R.I.B.A., referring to multi-storey buildings, said the scheme designed by Dr. Mautner made possible the use of rigid frames, and the assembly of columns and beams in rigid frames of one storey high. The advantage of prestressing in saving steel and so on also applied, but the main point was that the units were assembled by threading the cable through the length of the column and then through the ends of the beam, or through the length of the beam and the ends of the column. The joint was laid between beams and column as in the case of the bridge referred to. This enabled the units to be precast in a factory, taken to the site, assembled and erected in one-storey frames, or precast on the site and then prestressed and assembled in frames.

MR. ELLIOTT said the cutting of prestressed units was quite possible if they were self-bonding, but it was not economic. The usual method was to make up a job from drawings and then order the materials. That was, after all, done with precast concrete products.

With regard to continuity, it was very simple to provide continuous members, especially with post-tensioning. The wire could be deflected within the unit. In fact, it could be put in horizontally to change the contour of the main structure element in order to distribute the stresses as wanted in any part of the job. The hangar in Belgium had an upward cant on the beam, which meant that there was a certain amount of compressive strength at the ends in order to provide some rigidity to the frame. In the case of self-bonded wires it was a little more difficult. It could be done by the simple method of making the framing jointed at the points where the stress changed from compression to tension. That was a more satisfactory approach to providing continuity for precast concrete work. He still thought it possible to provide a re-entrant cable over the points of continuity in order to provide some stressing at that point.

With regard to the ability to knock holes in small beams, that was a somewhat antiquated method. It would be better to cast a series of holes down the span of the beam.

In the case of a large framed building it was possible to make some provision in the frame design to carry out prestressing on the site. There was also a point about two-way reinforcement: the two-way reinforcement of a floor was quite possible in prestressing, and the same relative results were achieved as in the case of reinforced concrete.

For continuity there was a better method than reinforced concrete rods. A type of rod had been invented some time ago which was rigid, and the wires were pre-tensioned round it. The rod was then cast into concrete with the wires, and at a later stage the concrete was set and the rod could be taken out.

It was possible to precast on the curve direction. There were also systems of prestressing that way by using external ties in the same way as a rod.

INDUSTRIAL NATIONALISATION

SOME indication of the industries likely to be nationalised during a further socialist term of office was given by MR. IAN MIKARDO, M.P., in an address to members of the Fabian Society at the Conway Hall on November 18. They include those which have the power to fix prices such as footwear machinery, flour, sugar, bricks and cement. He said that many of these industries were already subject to controls but if the controls proved insufficient the industries might have to be nationalised. Others referred to were those industries with the power to effect our balance of payments position (such as shipping); those with the power to make an area very prosperous or bankrupt (such as ship-building); those which could be more efficiently run by nationalisation which would result in an economy of man-power and of administrative effort (including the Joint Stock Banks and Life Assurance, both ordinary and industrial); and those which tended to rely on the State for financial backing. Aircraft and aero-engine manufacture were examples. Mr. Mikardo said that various Socialist groups were examining all these questions. A report would be presented to the Party early in the New Year.

NEWS IN BRIEF

An Institute for Foremen.

A national educational body for foremen and supervisors in workshops, known as the Institute of Industrial Supervisors, was officially launched by five hundred Midland foremen at the Birmingham Central Technical College on November 27. Its headquarters will be at Bank Chambers, 47, Temple-row, Birmingham, 2.

New Hall for Liverpool.

Liverpool Corporation Finance Committee has approved, in principle, plans for an exhibition hall covering an area of 1¼ acres, together with a conference hall with accommodation for 2,500, on a blitzed site in the centre of the city. The site was originally occupied by the Customs House, which was destroyed during the war. It is hoped to make arrangements for priority in order that the exhibition hall may be ready in time for the Festival of Britain in 1951, for Liverpool has been chosen as one of the centres for the Festival. The scheme was put forward by the city architect and housing director, Mr. R. Bradbury, and the town planning officer and city engineer, Mr. H. T. Hough. It provides for an exhibition hall 450 feet long, 60 feet high and 160 feet wide. The costs have not yet been determined, but when a scheme was mooted some years ago it was intimated that approximately a quarter of a million pounds would be needed. The scheme provides for restaurants, workshops and a series of small halls for individual exhibitions, while there will be ample accommodation for cars and buses. Commanding the whole of the site will be a carillon tower 200 feet in height.

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British Standards.

The "British Standard for Leaded Zinc Oxide" (B.S. 1481: 1948) may be obtained from the B.S.I., 24, Victoria-street, S.W.1, price 2s. post free. Copies of the "Amendment No. 1 to B.S. 1212, Ball Valves ('Portsmouth' Type) (P.D. 831)" are also available free of charge.

Glass and Foundry Sand.

Responsibility for glass sand and foundry moulding sand has now been transferred from the Raw Materials Department, Board of Trade, to the Ministry of Works. Inquiries should be addressed to Ministry of Works, B.M.3, Lambeth Bridge House, Albert Embankment, S.E.1.

A.B.T. Secretaryship.

Mrs. Virginia Penn is resigning her post as Secretary of the Association of Building Technicians on doctor's orders, as from the end of this year. Mrs. Penn joined the staff of the A.A.S.T.A., as it was then known, in 1939, and became acting secretary in 1940. Her appointment as general secretary was ratified in 1944. Mr. F. Shrosbree will succeed Mrs. Penn as general secretary.

New Appointments at the B.S.I.

The general council of the British Standards Institution has elected Mr. Roger Duncalfe as chairman, Mr. John Ryan, M.C., as chairman of the finance committee, and Mr. Herbert J. Manzoni, C.B.E., as chairman of the building divisional council.

Plastics Certification Mark.

A new step in the practice of providing symbols of quality among industrial products takes the form of a certification mark for plastics and articles made from plastics. Certification of plastics is being developed from an agreed scheme between the British Plastics Federation and the British Standards Institution. The purpose is to ensure, by the allocation and use of the mark, that materials and articles made from plastics are correctly manufactured according to the relevant British Standards Specification. The certification mark ("Plastics Mark") is in the form of a circle with the initials B.S. in the centre, indicating British Standard, and the initials B.P.F. on the left-hand side referring to the British Plastics Federation. In practical use, code letters and numbers on the right-hand side refer to the manufacturer and the specification concerned.

KENT'S ALUMINIUM SCHOOL

Building of an aluminium school, one of the first in the country, will be begun this month at Cray-road, Sidcup, Kent. It will be the first of several in the county. The Kent Education Committee has introduced this type of building into its schools construction programme to avoid the use, as far as possible, of controlled materials. Although the sections are to be prefabricated, the school will not be built to a standard pattern. The school will accommodate 240 juniors and 120 infants. The whole of the prefabricated aluminium part of the structure is being supplied by the Bristol Aeroplane Co. (Housing), Ltd., and the scheme has been prepared under the direction of the County Architect, Mr. Sidney Loweth, F.S.A., F.R.I.B.A., by a team of architects in the Kent County Council's Buildings Department. Schools of similar aluminium construction are also to be erected at Maidstone Shepway county primary school, Folkestone Mundella site, at Lessness Heath, Erith, and on the Dartford Heath Farm site.

RATES OF WAGES IN THE BUILDING TRADE [AS FROM JULY 11, 1948]

(Every endeavour is made to ensure accuracy, but we cannot be responsible for errors)

KEY TO SCHEDULE OF GRADE RATES.

Grade Classification,	A	A1	A2	A3
Craftsmen	2/9½	2/9	2/8½	2/8
Labourers	2/3	2/2½	2/2	2/1¾

Town.	Grade.
Aberavon	A
Aberdare	A
Abergavenny	A
Abingdon	A2
Accrington	A
Addlestone	A
Aldeburgh	A3
Aldershot District	A2
Alfreton U.D.	A
Alnwick	A1
Altrincham	A
Ambie	A1
Amersham	A1
Ammanford	A
Andover	A2
Ardingly	A2
Arundel	A2
Ascot	A2
Ashby-de-la-Zouch U.D.	A
Ashby Woulds U.D.	A
Ashford (Kent)	A2
Ashford (Middlesex)	A
Ashington	A
Ashtead	A
Ashton-under-Lyne	A
Aspatria and Brayton	A2
Atherstone (parts of)	A1
Aylesbury	A2
Aylesby (Yorks)	A
Aylesham	A3
Bagshot	A2
Bakewell U.D.	A2
Banbury	A2
Barnard Castle U.D.	A1
Barnoldswick U.D.	A1
Barnsley	A
Barrow-in-Furness	A
Barrow-upon-Soar R.D. (exc. Thrussington A2)	A
Barry	A
Basford R.D. (exc. Willoughby-on-the-Wolds A2)	A
Basingstoke	A2
Bath	A
Batley	A
Baxterley	A1
Beaconsfield & District	A1
Beamish	A
Bearl	A
Bearpark	A
Beccles	A3
Bedale R.D.	A
Bedford	A
Bedlington	A
Bedwas	A
Beeston & Stapleford U.D.	A
Belper U.D.	A
Belton	A
Berkhamsted	A1
Berrington	A1
Berwick District	A1
Beverley	A
Bexhill-on-Sea	A2
Biggleswade	A2
Billericay	A1
Billing	A
Billingham U.D.	A
Bilsthorpe	A
Birchington	A2
Birkenhead	*
Birmingham C.B.	†A
Bishop Auckland	A
Bishop's Stortford	A1
Bispham	A
Blackburn	A
Blackpool	A
Blackwell R.D.	A
Blaydon U. D.	A
Blidworth	A
Blyth	A
Bognor Regis	A2
Boldon U.D.	A
Bolsover U.D.	A
Bolton	A
Bourne End	A1
Bournemouth District	A1
Bracknell	A2
Bradford	A
Bradford-on-Avon	A2
Braintree	A2
Breconshire, County of	‡A3
Brent Knoll	A2
Brentwood	A
Bridlington	A
Brierfield	A
Brighouse	A
Brighton	A1
Bristol	A
Broadstairs	A2
Bromsgrove U.D.	A
Brough	A
Broughton (Cheshire)	A
Buckley	A
Bungay	A3
Burnham-on-Crouch	A3
Burnley	A
Burton-on-Trent C.B.	A
Bury	A
Bury St. Edmunds	A3
Buxton	A1
Byfleet	A1
Calder Valley	A
Cambridge	A
Cannock U.D.	A
Canterbury	A2
Cardiff	A
Cardiganshire, County of	‡A3
Carlisle	A
Carmarthenshire, Cnty.of	‡A3
Carnarvonshire, Cnty of	‡A3
Carnforth	A
Castleford	A
Caterham	A
Chapel-en-le-Frith	A1
Charmy Down	A
Chatham & District	A1
Cheadle (Staffs) R.D.	A
Chelmsford	A
Cheltenham	A1
Chepstow	A1
Chertsey	A
Chester	A
Chesterfield M.B.	A
Chesterfield R.D.	A
Chester-le-Street U.D.	A
Chichester	A2
Chippenham (inc. Chippenham Within and Hardenhuish)	A2
Chorley	A
Clacton	A1
Cleethorpes	A
Clevedon	A1
Cleveleys	A
Clitheroe	A
Coalville U.D.	A
Cobham (Surrey)	A
Colchester	A
Coine	A
Colwyn Bay	A1
Congleton	A1
Consett	A
Conway	A1
Cornwall, County of	‡A2
Coventry C.B.	A
Cranbrook	A2
Cranleigh	A2
Crawley (Sussex)	A2
Crewe	A
Cromer	A1
Crowborough	A2
Cuckfield	A2
Dalton-in-Furness	A
Darlington District	A
Darwen	A
Deal	A2
Denbigh Town	A2
Derby C.B.	A
Devizes	A2
Devon, County of	‡A2
Dewsbury	A
Dideot	A2
Diss	A3
Doncaster C.B.	A
Dorking	A1
Dorset, County of (except-ing Poole and Wimborne A1)	A2
Dover	A2
Dovercourt	A1
Driffield U.D.	A1
Droitwich M.B.	A1
Dudley M.B.	A
Dunstable	A
Durham City	A
Eastbourne	A1
E. Glam. & Mon. Val.	A
East Grinstead District	A2
Eastwood (Notts.) U.D.	A
Ebbw Vale & District	A
Edenbridge	A2
Ely	A3
Epping	A
Exeter	A1
Fakenham	A3
Falmouth	A2
Fareham	A
Faversham	A2
Felixstowe	A1
Filey U.D.	A1
Fleetwood	A
Flint	A
Folkestone	A2
Frinton	A1
Frome	A1
Gainsborough R.D. (Mid. pt.)	A2
Gateshead	A
Gillingham (Kent)	A1
Glossop	A
Gloucester	A1
Gloucestershire, Cnty. of	‡A2
Godalming	A2
Goole M.B.	A
Gosport	A
Grantham M.B.	A1
Gravesend	A
Great Yarmouth	A1
Grimsby (Yorks.)	A
Grimsby R.D. (Lincs.)	A3
Guildford District	A2
Guilsborough	A1
Guiseley	A
Halesowen M.B.	A
Halifax	A
Halstead	A2
Haresfield	A1
Harlow	A1
Harpenden	A1
Harrogate	A
Hartlepool	A
Harwich	A1
Haslemere	A2
Hastings	A2
Hatfield (Herts.)	A
Haywards Heath	A2
Hemel Hempstead	A1
Henley-on-Thames	A2
Hereford	A2
Herefordshire, Cnty. of	‡A2
Herne Bay	A2
Hertford	A
Hexham U.D.	A
Heysham	A
High Wycombe	A1
Highworth	A2
Hinckley U.D.	A
Hitchin	A1
Hoddesdon	A
Horley	A2
Horsham	A2
Horwich	A
Huddersfield	A
Hull	A
Hunstanton	A2
Huntingdon (Staffs)	A
Ilkley	A
Ingatestone	A1
Ipswich	A
Isle of Sheppey	A2
Isle of Thanet	A2
Isle of Wight	A3
Jarrow M.B.	A
Keighley	A
Kendal	A
Kenilworth U.D.	A
Kettering M.B.	A
Keynsham	A
Kidderminster M.B.	A
King's Lynn	A2
Kingskerswell	A1
Kingsteignton	A1
Kirkham	A
Knaresborough U.D.	A
Knowle	A1
Lancaster	A
Leamington M.B.	A
Leatherhead	A
Leeds	A
Leicester C.B.	A
Leighton Buzzard	A2
Letchworth	A1
Lewes	A2
Lichfield M.B.	A1
Lincoln C.B.	A
Littlehampton	A2
Liverpool	*
Llandudno	A1
Llanelly	A
London	*
Long Eaton	A
Loughborough M.B.	A
Louth M.B.	A2
Lowestoft	A1
Loxton	A2
Luton	A
Lyneham (Devon)	A1
Macclesfield	A1
Maidenhead	A1
Maidstone	A1
Maltby	A
Maldon (Essex)	A2
Malvern U.D.	A2
Manchester	A
Manningtree	A1
Mansfield M.B.	A
March	A2
Margate	A2
Market Harborough	A1
Maryport	A
Matlock U.D.	A1
Melksham	A2
Melton Constable	A3
Melton Mowbray U.D.	A2
Merthyr	A
Middlesbrough	A
Middleton	A
Middlewich	A1
Milford Haven	A2
Morecambe	A
Morley	A
Mundesley	A2
Nantwich	A1
Nelson	A
Newark-on-Trent R.D.	A1
Newbury	A2
Newcastle-on-Tyne	A
Newcastle-under-Lyme	A
New Forest District	A2
Newmarket	A2
Newport, Mon.	A
Newport Pagnell	A2
Newton Abbot	A1
Northallerton Dist.	A
Northampton C.B.	A
North Shields	A
Norton Radstock	A1
Norwich	A
Nottingham C.B.	A
Nuneaton M.B.	A
Oakham U.D.	A2
Oldham	A
Ongar	A
Ormskirk	A
Ossett and Horbury	A
Oxford	A
Oxted	A1
Paignton	A1
Peterborough	A
,, Soke	A1
Pickering	A3
Plymouth	A
Pontefract	A
Pontypridd District	A
Portishead	A
Portland Stoneyards	A
Portsmouth	A
Port Talbot	A
Preston	A
Pudsey	A
Pulborough	A2
Radnorshire, County of	‡A3
Ramsgate	A2
Rayleigh	A1
Reading	A
Redcar B.	A
Redditch U.D.	A
Redhill and Reigate	A
Ripon	A3
Rochdale	A
Rochester	A1
Rotherham	A
Rugby M.B.	A
Saffron Walden	A2
St. Albans	A
St. Helens	A
St. Neots	A2
Salisbury City	A2
Salisbury Plain	A2
Sawbridgeworth	A1
Saxmundham	A3
Scarborough	A
Scunthorpe	A
Selby	A
Sevenoaks	A1
Sheerness	A2
Sheffield	A
Shipley	A
Shoeburyness	A
Shoreham	A1
Shrewsbury M.B.	A
Sittingbourne	A2
Skegness U.D.	A1
Skipton U.D.	A1
Sleaford U.D.	A3
Slough	A1
Smethwick C.B.	†A
Snettisham	A2
Somerset, County of	‡A2
Southampton	A
Southend-on-Sea Dist.	A
Southport	A
South Shields C.B.	A
Spalding U.D.	A2
Stafford M.B.	A
Staines	A
Stamford M.B.	A1
Stantonwick	A
Stevenage	A1
Stockport	A
Stockton R.D.	A
Stockton-on-Tees	A
Stoke-on-Trent C.B.	A
Stoke Orchard	A1
Stourbridge M.B.	A
Stourport U.D.	A
Stowmarket	A3
Stratford-on-Avon M.B.	A1
Sunderland District	A
Sunningdale	A
Sutton Coldfield M.B.	A
Swaffham	A3
Swanage	A2
Swansea	A
Swindon	A2
Swinton U.D.	A
Tamworth M.B.	A
Tenterden	A2
Tewkesbury	A1
Thames Haven	A
Thetford	A3
Thorpe Bay	A
Thurrock U.D.C. Area	A
,, North of, to Billericay	A1
Tilbury	A
Todmorden	A
Tonbridge	A1
Torquay	A1
Totnes	A1
Trowbridge	A2
Tunbridge Wells	A1
Tynemouth C.B.	A
Uppingham (Salop)	A1
Uttoxeter U.D.	A2
Wakefield	A
Wallsend B.	A
Walsall C.B.	A
Walsden	A
Walton-on-Naze	A1
Ware	A
Warminster	A2
Warrington	A
Warwick M.B.	A
Wellington R.D.	A1
Wells (Norfolk)	A3
Welwyn	A
Welwyn Gar. City	A
West Bromwich C.B.	A
Westbury	A2
Westcliff-on-Sea	A
Westerham	A1
Weston-super-Mare	A1
Weybridge	A
Weymouth	A2
Whitby U.D.	A1
Whitstable and District	A2
Wickford	A1
Widnes	A
Wigan	A
Wigton	A3
Willington	A
Wilmslow	A
Wilts. County of	‡A2
Winchester	A2
Windermere	A3
Windsor and Eton	A1
Wisbech	A2
Witham	A2
Woking (District)	A1
Wokingham	A2
Wolverhampton C.B.	A
Woodbridge	A3
Worcester C.B.	A
Workington	A
Worksop M.B.	A
Worthing	A2
Wrexham (incl. Cefn)	A
Wroughton	A2
Wylam	A
Wymondham	A3
York	A

* For Birkenhead, Liverpool, and London the rates are :—Craftsmen, 2s. 11d.; Labourers, 2s. 4d. In the case of London the rate beyond the 12-mile radius is :—Craftsmen, 2s. 10½d.; Labourers, 2s. 3½d.

† Plus 2d. per working day.

‡ This is the County rate and applies except where higher grades are stated.

NOTE.—Carpenters, Joiners and Plumbers in all towns and districts receive 2d. per day Tool Allowances.

WOMEN'S RATES.—In all districts throughout the country the rate of wages for women engaged in craft processes is 1s. 11½d. per hour. Women introduced to carry out work other than craft processes, 1s. 7½d. per hour.

For Building Trade Wages in Scotland, see page 666

PRICES CURRENT OF MATERIALS*

NOTE.—These prices apply to large quantities of materials at works at London stations, or site, in London area as stated. Prices for smaller quantities ex merchant's warehouse will of course be higher. Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry. The prices of softwoods are for cash on delivery.

BRICKS, etc.

	£ s. d.
First Hard Stocks	8 15 0
Second Hard Stocks	8 0 0
Mild Stocks	6 10 0

All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.

2½-in Nominal Phorpres Bricks.	At Maiden Lane Stn., per 1,000. s. d.	To Sites in West Central District per 1,000. s. d.
Commons	73 0	85 0
Cellular	67 11	82 11
Keyed	75 0	87 0
Cellular Keyed	69 11	84 11
Rustics	93 0	105 0
Cellular Rustics	87 11	102 11
Single Bullnose	93 0	105 0
Best White Facings	156 6	157 10†
" "	142 10*	—
Sandfaced	103 0	115 0
Cortex Facing Brick	88 0	100 0

* At Kings Cross Stn. † ex Kings Cross Stn.

	£ s. d.
Best blue Pressed Staffs. (London Stns.)	18 9 0
Do. Bullnose (London Stns.)	19 2 0
Blue Wire Cuts (London Stns.)	16 7 6

Best Stourbridge Fire Brick (London Stns.) :—

£ s. d.		£ s. d.
2½ in. .. 16 18 6	3 in. ..	19 16 0

GLAZED BRICKS (London Stns.). The prices given below are now subject to a percentage addition of 22½.

Best White Ivory and Salt Glazed			D'ble Stretchers	53	10 0
			D'ble Headers	48	10 0
Stretcher	40	0 0	One side & two ends	54	10 0
Headers	39	10 0	Two sides & one end	56	0 0
Quoins, Bullnose & 4½in. Flats	50	0 0	Splays and Squints	52	0 0

Second Quality, £2 0s. per 1,000 less than best. Cream and buff, £2 0s. extra over white. Other colours. Hard Glaze, £5 10s. 0d. extra over white.

Haulage to site 20s. 1,000.

PARTITION SLABS.

Delivered Central London Area.

HOLLOW CLAY PARTITION BLOCKS.
London Brick Company.

Minimum Lorry Loads. Keyed.	s. d.
2" per yd. sup. 120 yds.	3 1
2½" " " 100 "	3 4
3" " " 100 "	4 0
4" " " 84 "	4 7

Half blocks *add* 2s. per yard super to above prices

CLINKER CONCRETE.

2" per yd. sup.	2	8	3" per yd. sup.	4	0
2½" " "	3	4	4" " " ..	5	3

CRANHAM TERRA COTTA.

	s. d.
Size 12 x 9 x 2" per yd. super	3 1
Size 12 x 9 x 2½" " "	3 4
Size 12 x 9 x 3" " "	4 0
Size 12 x 9 x 4" " "	4 7

HEMPSTEAD—KEYED TWO SIDES.

12 x 9 x 2"	3	1	12 x 9 x 3"	4	0
12 x 9 x 2½"	3	4	12 x 9 x 4"	4	7

Per yard super d/d. Free on site, London. Plus 2d. for smooth one side, and 4d. for smooth both sides.

STONE.

	s. d.
BATH STONE—	
Monks Park	5 4
St. Aldhelm Box Ground	5 10

Delivered in railway trucks at South Lambeth, G.W.R., per ft. cube.

PORTLAND STONE—
Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, S.Rly. ..... per ft. cube 6 1½
NOTE.—1d. per ft. cube extra for every ft. over 20 ft. *average* and ½d. beyond 30 ft.

HOPTON-WOOD STONE—
F.O.R. Quarries, Wirksworth, Derbyshire.
Random blocks up to 3 ft. 3 in. long and not over 10 cu. ft. ..... per ft. cube 22 6
Slabs—Random sizes sawn 2 sides, up to 5 ft. long and not over 15 ft. super, ½ in. per ft. super 4 7

YORK STONE, BLUE—*Robin Hood Quality*.
Delivered at any Goods Station, London.

		s. d.
6 in. sawn two sides landings to sizes (under 30 ft. super)	per ft. super	9 4
6 in. rubbed two sides, ditto	"	10 10
3 in. sawn two sides slabs (random sizes)	"	4 5
2 in. to 2½ in. sawn one side slabs (random sizes) (paving)	"	2 4
1½ in. to 2 in. ditto	"	2 1½

HARD YORK—
Delivered at any Goods Station, London

		s. d.
Scrappled random blocks per ft. cube		13 4
6 in. sawn two sides landings to sizes (under 40 ft. super)	per ft. super	10 0
6 in. rubbed two sides, ditto	"	11 10
4 in. sawn two sides slabs (random sizes)	"	6 5
3 in. ditto ditto	"	4 10
2 in. self-faced random flags per yd. super		19 9

CEMENT.

Best British Portland Cement. Standard Specification delivered London area	£ s. d.
6-ton loads and upwards site ..... per ton	3 0 6
1- to 6-tons site	3 3 6

In non-returnable paper bags charged at 11/– net per ton or 7d. each net per sack in lots of less than 1 ton.
In non-returnable jute sacks charged at 11/– per ton.
In returnable jute sacks charged at the rate of 35/6 net per ton of cement of 1/9½ net per sack in lots of less than 1 ton. Credit on return at 1/6 net per sack.
In returnable cotton sacks charged at the rate of 3/4 net each sack. Credit on return at 3/– net each sack.

"Ferrocrete" Rapid Hardening Cement	
6-ton. loads and upwards site	3 6 6
1- to 6-tons site	3 9 6

In paper bags 11/– per ton extra.

"Aquacrete" Water Repellent cement, 31/6 per ton on ordinary "Blue Circle" prices. In paper bags, 9/– per ton extra.	
Red, Buff or Khaki "Colorcrete" in 6-ton lots	5 2 0

In paper bags 9/– per ton extra.

Other colours, according to colour. In 4-ton lots from 173/– to 397/– per ton (including paper bags).	
"Snowcrete" White Portland Cement (In free paper bags)	11 14 0
Under one ton ..... per cwt.	0 13 11
"417" Cement (Ultra Rapid Hardening) Delivered Site London Area in 6-ton lots and upwards	4 2 0

In paper bags 9/– per ton extra.

Super Cement (Waterproof), bags extra..	4 12 0
Cullamix Tyrolean Finish....£7 15 6 to	9 9 0
(1-ton lots and upwards, including cost of paper bags).	

£ s. d.		£ s. d.
Parian Cement 8 1 9	Keen's Cement, White	8 1 9
	Pink	7 15 6

PLASTER.

£ s. d.		£ s. d.
Coarse, Pink 4 15 3	Sirapite, Coarse..	4 16 3
" White 5 4 9	" Finish ..	5 4 3

Above prices for 1-ton loads and over London Area.

Blue Lias Lime, inc. bags, 6-ton lots	5 17 6	Hydrated Lime, 6-ton lots	4 1 6
Granite Chips, 6-ton lots ..	2 5 0	Lump Lime, 6-ton lots	3 15 3
		Hair, per cwt. ..	4 4 6

Stourbridge Fireclay in paper bags £4 2s. 0d., 6-ton lots at railway depot.

SAND.

D/D site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		s. d.
Thames Ballast	per yd.	15 9
Pit Ballast	"	15 10
Pit Sand	"	15 2
Washed Sand	"	17 0
½ in. shingle	"	15 2
¼ in. Broken Brick	"	17 6
Pan Breeze	"	10 4

TILES.

Delivered at London rate stations in full truck loads of not less than 6 tons	Per 1,000 f.o.r. London.
Best machine-made tiles from Broseley or Staffordshire districts	9 14 6
Ditto, hand-made, ditto	11 11 0
Ornamental ditto	12 4 0
Hip and valley tiles—Hand-made ..... (per dozen) —Machine-made	19 5 18 4

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES.

First quality slates from Penrhyn or Portmadoc. carriage paid in full truck loads to London Rate Station.

Per 1,000 actual £ s. d.		£ s. d.		£ s. d.
24 by 12	67 14 0	18 by 10	34 13 0	
22 by 12	59 2 0	18 by 9	31 2 0	
22 by 11	53 6 6	16 by 10	30 10 0	
20 by 12	46 10 0	16 by 8	23 16 0	
20 by 10	44 12 6			

NOTE : Breakage in transit, purchasers' responsibility.

PLUMBERS' BRASS WORK.

Delivered in London.

M.O.H.

S.D. BIB COCKS CRUTCH HEAD, FOR IRON.
½ in 66/– ¾ in. 108/– per doz.

TOILET BIB COCKS FOR IRON.
½ in. 114/– ¾ in. 171/– per doz.

S.D. STOP COCKS FOR IRON.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
72/–	111/–	189/–	269/–	363/–	590/– per doz.

S.D.S. COCKS WITH TWO UNIONS FOR LEAD.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
102/–	164/–	264/6	369/–	438/–	736/– per doz.

DOUBLE NUT BOILER SCREWS.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
17/–	20/–	33/–	68/–	108/–	140/– per doz.

HEAVY CROYDON BALL VALVES.

½ in.	¾ in.	1 in.	1¼ in.	1½ in.
93/–	149/–	185/–	371/–	500/– per doz.

CAPS AND SCREWS.

1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
23/6	26/6	45/–	68/–	89/–	112/– per doz.

BRASS SLEEVES.

1½ in.	2 in.	3 in.	3½ in.	4 in.
29/–	31/–	67/–	83/–	101/– per doz.

LEAD TRAPS WITH BRASS CLEANING SCREWS.

	1½ x 6 lb.	1½ x 6 lb.	2 x 7 lb.	3 x 7 lb.
Lead P.	58/3	72/9	116/6	199/– per doz.
Lead S.	70/6	87/3	143/–	257/0 per doz.

SOLDER.—Plumbers', 3/3, Tinmen's 4/2, Blow pipe, 4/3 per lb.

Copper Tubes 1/11 per lb. Basis.
Brass Tubes .....1/11½ per lb. Basis.
Basis prices are subject to extras.

PAINTS, etc.

		£ s. d.
Raw Linseed Oil (5 galls.)	per gallon	1 1 9
Boiled Linseed Oil (5 galls.) ..	"	1 2 3
Genuine White Lead (free kegs)	cwt.	7 5 6
Genuine White Lead Paint (tins free)	gall.	2 5 0
Genuine Red Lead	cwt.	6 12 6
Putty (free packages)	cwt.	3 0 0
Size XD quality	fkn.	0 8 0

Turpentine substitute can be obtained and prices vary according to quality from 3/8 gallon upwards.

VARNISHES, etc.

		Per gallon.
Oak Varnish	Outside	1 6 0
Fine do.	"	1 16 0
Fine Copal	"	1 15 0
Pale Copal	"	1 12 8
Floor Varnish	Inside	1 10 0
Fine Pale Paper	"	2 1 0
Hard Drying Oak	"	1 10 0
Fine Hard Drying Oak	"	1 12 0
Fine Copal Varnish	"	1 13 6
Best do.	"	1 16 0
Best Japan Gold Size	"	1 15 0
Best Black Japan	"	1 8 6
Brunswick Black		1 4 6
Berlin Black		1 8 6
Knotting (patent)		1 12 6
French and Brush Polish		1 8 6
Liquid Dryers in Terebene		1 8 6

GLUE.

Best Scotch Glue	per ½ cwt.	4 14 6
Croid Glue	per lb.	2 9

* The information given on these pages has been specially compiled for THE BUILDER, and is copyright. The aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information. Prices are subject to 2½ per cent. cash discount.

PRICES CURRENT OF MATERIALS—(contd.)

See Note at top of preceding page.

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION.	PER TON
R. S. Joists, cut and fitted	£30 10 0
Plain Compound Girders	£35 0 0
" Stanchions	£42 10 0
In Roof Work	£53 0 0

NOTE.—These prices are for standard pieces and not special pieces of an awkward nature.

MILD STEEL ROUNDS.—To London Stations, per ton.

Diameter.	£ s. d.	Diameter.	£ s. d.
½ in.	26 17 6	½ in.	24 12 6
⅝ in.	26 2 6	⅝ in. to 2¾ in.	23 17 6
¾ in.	25 7 6		

W. I. TUBES.

TUBES AND TUBULARS.

Galv. Class	A.	List price, less	12½ per cent.
" "	B.	" "	7½ "
" "	C.	" Nett.	
Black. "	A	" less	33 per cent.
" "	B	" "	22½ "
" "	C	" "	15 "

C.I. HALF-ROUND GUTTERS.—London Prices ex Works, per yd. in 6 ft. lengths.

	Gutters.	Nozzles	Stop ends.
3 in.	2/5	2/2	7d.
3½ in.	2/8	2/5	7d.
4 in.	2/10	2/7	1/–
4½ in.	3/1	3/–	1/2
5 in.	3/5	3/3	1/3

O.G. GUTTERS.

3 in.	3/1	2/10	9d.
3½ in.	3/7	2/10	1/–
4 in.	3/7	3/–	1/2
4½ in.	3/8	3/5	1/3
5 in.	4/6	4/–	1/5

RAIN WATER PIPES.

Per yd. in 6 fts.	Pipe.	Bends. Angles.	Branches
2 in.	5/–	2/7	3/10
2½ in.	5/3	3/–	4/6
3 in.	5/10	3/8	5/6
3½ in.	6/8	4/5	6/5
4 in.	7/8	5/3	7/8

NET PRICES.

Tonnage allowance—4-ton lots, 5 per cent.
2-ton lots, 2½ per cent.

L.C.C. COATED SOIL PIPES.—London Prices, ex stock.

Per yd. in 6 fts.	Pipe.	Bends.	Branches
2 in.	5/11	4/6	5/6
2½ in.	6/3	5/1	6/10
3 in.	6/11	5/6	8/3
3½ in.	7/10	6/10	9/6
4 in.	8/11	7/8	11/1

L.C.C. COATED DRAIN PIPE.

	cwt. qr. lb. per yard in 9 fts.	Bends.	Branches
4 in.	1 1 17	16/3	12/3	21/6
6 in.	2 0 1	24/2	25/4	43/9

Per ton basis in London.

	£ s. d.
IRON. — Staffordshire Crown, Merchant quality	28 5 0
IRON—Staffordshire Marked Bars	36 0 0
Mild Steel Bars	22 10 0
Mild Steel Hoops	23 17 6

Ex Merchant's Stock per ton (two-ton) lots.

	£ s. d.
Soft Steel Sheets C.R. and C.A.—	
20 gauge	28 7 6
24 gauge	29 7 6
26 gauge	29 12 6
Galvanised Corrugated Sheets, 6 ft. to 9 ft.—	
20 gauge	34 15 0
24 gauge	36 10 0
26 gauge	38 15 0
Galvanised Flat Sheets, C.R. and C.A.—	
20 gauge	35 15 0
24 gauge	37 10 0
26 gauge	39 15 0

Per ton.

	£ s. d.
Cut Nails, 3 in. and up, 1 ton lots	36 15 0

ALL NET.

METAL WINDOWS. — Standard sizes suitable for complete houses, included all fittings, painting two coats, and delivery to job, average about 5s. 0d. to 5s. 3d. per foot super.

LEAD, etc.

(Deliveries in London 5 cwts.)	Per ton. £ s. d.
LEAD.—Sheet, English, 3½ lb. and up	129 15 0
Pipe in coils	131 0 0
Soil pipe	134 0 0
Compo pipe	137 10 0

NOTE.—Country delivery, 10/– per ton extra, lots under 3 cwt., 4/– per cwt. extra and over 3 cwt. and under 5 cwt., 3/– per cwt extra. Extra if cut to size. Old lead, ex London area, per ton, £70 0. 0. Buyers pay carriage.

BUILDING TRADE WAGES IN SCOTLAND

Following are grade rates authorised by the Scottish N.J.C. from July 11, 1948. Every effort is made to ensure accuracy, but we cannot be responsible for errors that may occur.

Grade Classification A Craftsmen.... 2/9½ Labourers.... 2/3

Aberdeen ....A	Dumfriesshire ....A	Inverness ....A	Perthshire ....A
Ayrshire ....A	Dundee ....A	Inverurie ....A	Peterhead ....A
Banff ....A	Dunoon ....A	Kincardineshire ..A	Renfrewshire ....A
Berwickshire ....A	East Fife ....A	Kinross-shire ....A	Rothesay ....A
Bridge of Allan....A	East Lothian ....A	Lanarkshire ....A	Roxburgshire ....A
Broughty Ferry....A	Edinburgh ....A	Midlothian ....A	St. Andrews ....A
Clackmannanshire A	Fifeshire ....A	Monifieth ....A	Selkirkshire ....A
Doune....A	Forfarshire ....A	Moray and Nairn ..A	Stewartry ....A
Dunblane ....A	Glasgow ....A	Newport ....A	Stirlingshire ....A
Dunbartonshire....A	Greenock ....A	Peeblesshire ....A	Stornoway ....A
Dumfries ....A	Hamilton ....A	Perth ....A	Tayport ....A
			West Lothian ....A

The Scottish N.J.C. award on which this is based provides for variation to current rates of Apprentices and Trainees' wages, which will be increased according to scale.

The Information given in this table is copyright.

Painters' rates : 2/9½ Grade A ; 2/8½ Grade B. (Grade B towns are Banff and Moray and Nairn.)

GLASS.

SHEET GLASS, ORDINARY GLAZING QUALITY. CUT SIZES.

	Per ft. Super. d.
18 oz.	4½
24 oz. clear	5½
26 oz.	7½
32 oz.	9½

ENGLISH ROLLED PLATE AND FIGURED CATHEDRAL, ETC., IN CUT SIZES.

Over 500 ft. super of all kinds.	Per ft.
Rolled plate, ¼ in.	7½
Rough cast, 3/16 in.	8½
Rough cast, ¼ in.	8½
Figure rolled, and Cathedral white	7½
Figure rolled, and Cathedral tinted	10½
Rolled sheet	6
Reeded, Broad Reeded, Cross Reeded and Chevron Reeded, ¼ in. thick	11
Rolled plate is the same price as rough cast double rolled.	

	Per ft. d.
Wire Cast, ¼ in. thick	9½
Georgian Wired Cast	10½

HOLLOW GLASS BLOCKS.

	s. d.	
P.B. 2—5½ in. x 5½ in. x 3½ in.	2 6	each net.
P.B. 3—7½ in. x 7½ in. x 3½ in.	3 10	"
P.B. 32—7½ in. x 7½ in. x 3½ in.	3 10	"
Radiused Corner Brick to match up with—		
P.B. 2	4 6	"
P.B. 3	6 0	"
P.B. 32	6 0	"

TIMBER, SOFTWOODS AND HARDWOODS.

HOME GROWN TIMBER PRICES.—*See Statutory Rules and Orders*, 1947, No. 94, price 5d. net.

IMPORTED SOFTWOODS PRICES.—*See Statutory Rules and Orders*, 1947, No. 731, price 1s. 1d. net.

IMPORTED HARDWOODS PRICES.—*See Statutory Rules and Orders*, 1947, No. 1524, price 1s. 1d. net.

Note.—The above can be obtained from H.M. Stationery Office, York House, Kingsway, W.C.2.

24 hours
SERVICE
for
PLATE
GLASS
SHOP FRONTS
by
AYGEE
LIMITED
100, Westminster Bridge Road, London, S.E.1. Phone: Waterloo 6314
SILVERING, BEVELLING, POLISHING, Etc.
ABS

THE SCOTTISH BUILDER

NEW BUILDINGS

Glasgow.—The Adelphin Hotel (Glasgow), Ltd., are to carry out alterations and additions. —At St. Alphonse school certain additions to be made, for which the architect is John MacNab, 129, Bath-st., Glasgow.

Glasgow.—Plans approved for tenement houses at Doonston-dr. and James Grey-st., for which the architect is MacGregor Mitchell, Berkesley-st., Glasgow.—At Claremont-terr., for the Overseas League, alterations and additions to be made, for which the architects are Nodd & Wallace, West Regent-st., Glasgow.

Glasgow.—Oswald Toffolo & Co., Ltd., West Regent-st., Glasgow, to erect new buildings at Pinkston-rd.

Lanarkshire.—At Hillside school, Cambuslang, a scheme of additions and reconstruction will be carried out, for which the architect is J. Miller, 191, Ingram-st., Glasgow.—Additions and other works for the Agricultural Industries, Ltd., will be carried out at Port Dundas, the architects being Crouch & Hogg, 9, Woodside-cres., Glasgow.

HOUSE PLOTS

FEUING, BUYING AND SELLING

THE Central Land Board have issued a pamphlet, "House 1 (Scotland)," giving advice on feuing, buying or selling plots for the erection of houses. It points out that building value now belongs to the State and not to the owner of the land, and that a development charge would have to be paid before a house could be built on it. A prospective feuar or purchaser should pay only existing use value for the land, that is a feuing rate or purchase price appropriate to the use to which the land is at present being put, for example, use as agricultural land. Only if the present owner pays the development charge should the prospective feuar or purchaser pay a "building value" feuing rate or purchase price for the land.

The Board say there are three ways open to an owner disposing of land which will be fair to the feuar or purchaser who wants to build a house immediately:—to feu or sell the land at existing use value, leaving the feuar or purchaser to pay the charge; to pay the charge himself and sell or feu at a fair inclusive rate; or to pay the charge, build the house and dispose of the house and land at a price or feuing rate inclusive of the development charge. If existing owners would dispose of land and prospective owners would only pay for it as advised by the Board, land could change hands at rates which would not hinder or prevent houses being built.

Copies of the pamphlet are available from the Board's office, 102 George-street, Edinburgh, 2; at local authority offices; at the Inland Revenue District Valuers' offices, and at the Citizens' Advice Bureaux.

FUTURE CONSTRUCTION

PUBLIC APPOINTMENTS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list see previous issues. Those with an asterisk are advertised in this number. The dates at the heads of paragraphs are those for the submission of tenders; a dagger (†) denotes closing date for applications; the name and address at the end refer to the person from whom particulars may be obtained.

BUILDING

DECEMBER 7.

†***Enfield U.D.C.**—30 flats at Broadoak. Frank Lee, A.M.I.C.E., E. & S., 7, Little Park-gdns. Dep. £2 2s. Tenders by December 30.

†***Hastings C.B.**—Erection of new Primary Infants' School, Hollington. B. & Water E., 37, Wellington-sq. Dep. £3 3s. Tenders by January 7.

DECEMBER 8.

Liverpool.—Infants' School at Speke for Roman Catholic Authorities. J. C. Prestwich & Sons, Bradshawgate-chbrs., Leigh, Lancs. Dep. £3 3s.

DECEMBER 10.

†***Burton-on-Trent C.B.**—First instalment at Hillside Secondary Modern School. B.E. & S., Town Hall. Dep. £3 3s.

†***Dagenham B.C.**—(1) 148 flats with communal laundry and sub-station, (2) 62 houses, (3) 69 houses at Heathway Park estate. B.E. & S., Civic Centre.

†***Hampshire Police Authority.**—Police houses in Andover, Fareham, Gosport and Winchester. County A. Dep. £1 1s.

DECEMBER 11.

†***Essex C.C.**—Adaptations and repairs at Gilberd House (cost £4,500). H. Conolly (F.), County A.

DECEMBER 13.

Daventry R.D.C.—Four dwellings at Everdon. H. Bonsor, S., 44, High-st. Dep. £3 3s.

†***Durham C.C.**—Temporary classrooms at Washington Glebe County School, No. 391. County A., Court-la.

†***Durham C.C.**—Temporary classrooms at Blackhall Colliery School, No. 259. County A., Court-la.

Mitford and Launditch R.D.C.—Seven pairs of houses and 2 pairs of bungalows at various sites. H. Marsh, 4a, Market-pl., East Dereham. Dep. £2 2s.

DECEMBER 14.

†***East Sussex C.C.**—Erection of Stage 1, Uckfield Secondary School. E. A. Verger (F.), County A., County Hall, Lewes.

Elham R.D.C.—Four pairs of Airey houses at New-rd., Saltwood. C., Council Offices, Lyminge, Kent. Dep. £2 2s.

Liverpool T.C.—One pair of houses at Greystone Heath School, Stocks-la., Penketh, nr. Warrington. City A. and Director of Housing. Dep. £2 2s.

DECEMBER 15.

***Canterbury T.C.**—Temporary classroom block at Canterbury County Technical Girls' School, Barton Court. City A., Municipal-bldgs. Dep. £2 2s.

†***Lincoln (Parts of Kesteven) C.C.**—Three small lavatory blocks at Residential Establishment, Dysart-rd., Grantham. County A., County Offices, Sleaford, Lincs.

Pembroke R.D.C.—Eight Airey houses with roads, sewers, etc., at Jameston, Manorbier. J. Owen Parry & Lewis, Ammanford. Dep. £3.

DECEMBER 16.

†***East Sussex C.C.**—Erection of Haywards Heath County Primary School. E. A. Verger (F.), County A., County Hall, Lewes.

Sutton Coldfield T.C.—62 houses at site 3f, Falcon Lodge estate. B.S., Council House. Dep. £2 2s.

***Wantage U.D.C.**—Conversion of 29 Nissen huts into housing accommodation. S., Town Hall.

***Widnes T.C.**—14 houses at Ditchfield-rd., Hough Green. Boro' A., Brendan House, Widnes-rd. Dep. £2 2s.

DECEMBER 17.

Poole T.C.—16 dwellings, communal centre and caretaker's quarters at Rossmore-rd., Newtown, Parkstone. B.E. & S. Dep. £2 2s.

†***Worthing T.C.**—Conversion of Radar Station, Palatine-rd., into Primary School. B.E. & S. Dep. £2 2s.

DECEMBER 20.

Devizes R.D.C.—Six houses and site works at Great Cheverell. Pictor, Snailum & Huggins, Chartered Architects, Abbey-chbrs., Bath. Dep. £1 1s.

Rochdale T.C.—Block of garages at Kirkholt estate. B.S.

***St. Austell U.D.C.**—Ten houses at Poltair. E. & S., Municipal Offices, Truro-rd. Dep. £2 2s.

DECEMBER 21.

Bridge-Blean R.D.C.—90 houses at Hersden sites, nr. Canterbury. R. Miles, Building S., Council Offices, Old Dover-rd., Canterbury. Dep. £2.

DECEMBER 22.

***Bournemouth C.B.**—12 houses at Montgomery-ave. and Moorside-rd., Kinson estate. Boro' A. (Room 51). Dep. £2 2s.

***Wood Green T.C.**—56 flats at Vincent-rd. B.E. & S., Town Hall. Dep. £2 2s.

DECEMBER 28.

Castletown Town Commissioners.—12 dwellings at School Hill site. By-pass-rd. W. T. Quayle, 29, Athol-st., Douglas, I. of Man. Dep. £2 2s.

DECEMBER 31.

***Berks C.C.**—Central kitchen and garages at Drayton-rd., Abingdon. County A., 35, Bath-rd., Reading. Dep. £2 2s.

JANUARY 1.

Clare R.D.C.—Eight houses at Hundon. E. & S., 6, High-st., Haverhill. Dep. £3 3s.

***Hertford R.D.C.**—Six houses at Brickendon Green and 5 pairs at "Nutcroft," Hawkins Hall-la., Datchworth. C., 20, Castle-st. Dep. £3.

JANUARY 2.

Glouc. C.C.—Single-span reinforced concrete bridge over Birmingham-Bristol Railway at Gossington. County S., Quay-st. Dep. £3 3s.

JANUARY 3.

***Colchester T.C.**—43 houses of 4 types at Shrub End site. B.E., Town Hall. Dep. £2 2s. each type.

JANUARY 4.

Penllyn R.D.C.—Site preparation and construction of 8 houses at Parc, nr. Bala. R. Arthur Jones, County A., Llanfyllin, Mont. Dep. £2 2s.

JANUARY 5.

***Burnley C.B.**—Erection of Nursery School at Myrtle Bank. B.S., Town Hall.

JANUARY 7.

***Crewe T.C.**—14 houses at Davenport-ave. site. B.E. & Architect, Municipal-bldgs. Dep. £2 2s.

JANUARY 29.

***Leeds T.C.**—Contract 1: 144 houses at Iveson House estate; Contract 2: 14 at Seacroft estate; Contract 3: 16 at Beckett Park estate; Contract 4: 28 at Belle Isle estate; Contract 5: 52 at Newton Lodge estate; Contract 6: 146 at Moortown estate. R. A. H. Livett, O.B.E. (A.), City A., Priestley House, Quarry Hill. Dep. £2 2s.

***Salford T.C.**—Erection of Open-air School at Claremont Farm site. City E., Town Hall. Dep. £3 3s.

NO DATE.

***Beds Standing Joint Committee.**—12 police houses at four sites. County A., Shire Hall, Bedford. Dep. £2 2s. each site.

PAINTING, ELECTRIC LIGHTING, MATERIALS, ETC.

JANUARY 8.

East Suffolk C.C.—County S. (Materials).

JANUARY 10.

Camberwell B.C.—B.E. & S. (Materials).

JANUARY 15.

Herts. C.C.—County S. (Materials).

ROADS, SEWERAGE AND WATER WORKS

DECEMBER 3.

Wood Green T.C.—Service road and sewers at "The Hollies," Bounds Green-rd. Dep. £1 1s.

DECEMBER 14.

Doncaster C.B.—Tarmacadam road surfacing and reinforced concrete footpath flagging, etc., at Wheatley Park estate. Estates S., 15, South-parade. Dep. £3 3s.

Doncaster C.B.—Tarmacadam road surfacing, etc., at Broomhouse-la. estate, site No. 2. Estates S. Dep. £3 3s.

DECEMBER 20.

Halifax C.B.—Roads and sewers at Illingworth South housing estate. Dep. £2 2s.

DECEMBER 21.

***Hambledon R.D.C.**—Site preparation works at Cranleigh housing site. E. & S., Council Offices, Bury Fields, Guildford. Dep. £5 5s.

DECEMBER 28.

Thurrock U.D.C.—Stoneware sewers and cast-iron rising main, etc., with pumping station at Stifford Clays. E. & S., Council Offices, Grays. Dep. £3 3s.

DECEMBER 31.

Newbury T.C.—18-in. dia. sewage rising main, etc. B.S. and Water E., Municipal-bldgs. Dep. £3 3s.

JANUARY 1.

Tredegar U.D.C.—Service reservoir and water mains, etc., at Nantybwch Waterworks. W. Cory Goddard, M.I.C.E., Midland Bank-chbrs., Bridge-st., Newport, Mon. Dep. £3 3s., payable to U.D.C.

JANUARY 6.

Sutton and Cheam T.C.—Roads and drainage works at Hurstcourt-rd. (South), site C.7. B.E. & S. Dep. £1 1s.

GENERAL BUILDING WORK (LONDON)

Bermondsey.—FLATS.—At Adams-gdn. estate, proposed by B.C. at £24,945.

Camberwell.—FLATS.—L.C.C. sanctioned loan of £101,288 to B.C. for erection of 56 flats at Lytcott-gr. and Playfield-ter.

Hammersmith.—COMMUNITY HALL.—B.C. seeking M.H approval for a £5,000 community hall at Aspen-gdns. flats.

Highgate. — FLATS. — Proposal by Hornsey Housing Trust to build 22 old people's flats at Archway-rd. approved in principle by B.C.

Islington.—FLATS.—B.C. given authority for erection of 66 flats (part 2 of Sparsholt-rd. scheme), subject to receipt of loan sanction.

Kensington.—BUILDING.—M.O.W. considering acquisition of part of Holland House grounds for erection of Crown building for learned societies.

Leyton.—EDUCATIONAL BUILDINGS.—Essex C.C. to make compulsory purchase orders for following for educational purposes: 117 and 119, Pevensey-rd.; 117, 119, 121, 123 and 125, Dames-rd.; and 137 and 139, Vansittart-rd.

Marylebone.—BUILDING.—T.C. to develop area bounded by Allitsen-rd., Charlbert-st., St. John's Wood-ter. and Townshend-rd.

Marylebone.—FLATS.—B.C. approved 23 flats at St. John's Wood-rd. and Lisson-gr.

Marylebone.—HOUSING.—B.C. applied to L.C.C. for approval for erection of permanent housing in Seymour-pl.

Paddington.—FLATS.—L.C.C. sanctioned loan of £223,908 to B.C. for erection of superstructure of 109 flats at Fulham-pl.

Poplar.—FLATS.—B.C. to consider revised plans for 24 flats at Stafford-rd. and Tredegar-rd.

Poplar.—FLATS.—B.C. approved erection of 12 flats at Glengall-gr.

St. Pancras.—HOUSING.—L.C.C. propose 1,000 houses at £1,551,000.

Southwark.—FLATS.—L.C.C. sanctioned loan of £294,349 to B.C. for erection of 138 flats at Penrose-st.

Stoke Newington.—HOUSING.—B.C. to acquire following sites for housing purposes subject to L.C.C. loan sanction: 112, 114, Nevill-rd.; 12, Clissold-cres.

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Stoke Newington.—FLATS.—B.C. approved plans submitted by council's architects for 52 flats at Londesborough-rd. East.

Stoke Newington.—HOUSING.—B.C. to acquire 10, 12 and 14, Sandbrook-rd. for housing purposes.

Wandsworth.—FLATS.—L.C.C. approved scheme by Caroe & Partners, architects, for 133 flats at Balham-hill.

Wandsworth.—HOUSING.—Plans for 7,000 homes by L.C.C. include 6,000 at 14 sites adjoining Wimbledon Common and Putney Heath.

Wembley.—FLATS.—B.C. to erect 30 flats at Church-la.

Wembley.—FLATS.—B.C. to erect 60 flats at Forty-ave.

Wembley.—HOUSES.—B.C. to erect 26 houses at Harrow-rd. and Bridgewater-rd.

Westminster.—FLATS.—L.C.C. sanctioned loan of £185,264 to B.C. for erection of 97 flats at Pimlico.

(PROVINCIAL)

Bedlington.—U.D.C. propose houses at site behind Gleasewell-ter., Stakeford.

Blackpool.—C. Wood proposes warehouse at rear of 81-83, Highfield-rd., South Shore. H. D. Hartley, architect, 11, Condor-gro.

Bolton.—Knowles, Ltd., Peel Mills, propose extensions to factory at Sylvester-st. (Bradshaw, Gass & Hope (FF.), 19, Silverwell-st.).—G. Collier & Son, builders, 247, Ashworth-la., Astley Bridge, propose 12 houses off Kermoor-ave., Astley Bridge.

Bolton.—T.C. approved additions to spinning mill off Dudley-st., Tootal, for Broadhurst, Lee & Co., Ltd.—E.C. propose prim. sch. at Pilkington-st., Houghton-st. and Shaw-st.

Bridport.—R.D.C. applying to M.H. for loan of £31,460 for houses at Chideock and Burton Bradstock.

Brierley Hill.—U.D.C. propose restaurant off Upper High-st., Quarry Bank.

Bristol.—C. planning and reconstruction cttee. approved erection of flats at Blackboy-hill, subject to plans being satisfactory.

Bromsgrove.—Worcs. E.C. propose prim. sch. at Cofton Common. F. Gibberd (F.), 35, Gordon-st., W.C.1.

Bury.—T.C. approved:—Additions to "Mitre" hotel, Croston-rd., for Dutton's Blackburn Brewery Co., Ltd., The Brewery, Salford, Blackburn; works garage, Bolbolt Print Works, Walshaw-rd., for Horridge & Cornall, Ltd.; additions to works, Bridge Hall-la., for Transparent Paper Co., Ltd.—E.C. propose adaptations and equipment at Broad-st. College at £14,000.

Carlisle.—City C. allocated 100 houses, 20 to private enterprise. Plans by City E., 18, Fisher-st.

Chester.—M.H. consents to City C. borrowing £1,564 for acquisition of plots 3, 10 and 11 at Blacon site for temp. housing.

Chesterfield.—Hospitals Management cttee. propose buildings at Ashgate-rd. and nr. grammar school playing fields. A. Saxon Snell & Phillips (F.F.), 9, Bentinck-st.

Coventry.—E.C. applying to M.O.E. for sanction to loan of £885,400 for sec. sch. at Caludon Castle; prim. schs. at Brookside-ave., Parkgate-rd. and Wyken-close; addtional accommodation at Stoke Heath prim. sch., and comprehensive sec. sch. at Broad-la.—E.C. propose 7 canteen kitchens at schools.

Darlington.—Rise Carr Welfare Housing Society planning 148 houses at Longfield-rd.

Darwen.—Lancs E.C. propose day nursery at £10,000.

Eastry.—R.D.C. to build 96 houses in 1949.

Eccles.—T.C. approved:—Alterations at "Bridgewater Packet House" hotel, Barton-rd., for Boddington's Breweries, Ltd., Strangeways Brewery, Manchester 3; alterations at Climax Works, Patricroft, for James Robertshaw & Sons, Ltd.

Glamorgan.—C.C. propose prim. sch. at Maerdy. Architect, W. D. Walters.

Gomersal.—West Riding E.C. propose infants' sch. at Great Gomersal at £34,260, and junior and infants' sch. at Birkenshaw Bottom at £42,233.

Haltwhistle.—R.D.C. to build 44 houses at Bardon Mill.

Hanley.—T.C. to receive further allocation of 150 dwellings for rest of 1948.

Holditch.—Tilsley & Lovatt, Ltd., propose engineering works. Dorin & Leach, architects, 13, Tontine-sq., Hanley, Stoke-on-Trent.

Holywell.—T.C. to build 50 houses at Penyffordd, 50 at Northop, 30 at Northop Hall, 4 at Gwespyr, and 30 at Leeswood.—T.C.s to submit proposals to Ministry for erection of 10 houses at Halkyn and Rhesycae, 10 at Whitford, 16 at Soughton, 10 at Ysceifiog, and 10 at Nerquis.

Hyde.—T.C. approved:—Additions, Newton Printworks, for Calico Printers' Assn., Ltd., St. James'-bldgs., 889, Oxford-st., Manchester 1; additions to works at William-st. for G. Thompson & Co., Ltd.

Kent.—Minister of Education approved £2,000,000 plans by county Ed. Cttee. for 22 prim. schs., 18 sec. schs., 10 further education schemes and 3 special schs.

Liverpool.—Lancs E.C. propose junior and infants' sch. at Lambshear-la., Lydiate. H. Thearle (F.), architect, 66, Rodney-st., Liverpool 1.

Liverpool.—T.C. to buy Anthony, Boyd and Mitylene-sts. for erection of dwellings for population displaced during redevelopment of central residential area.

Liverpool.—City C. agree, in principle, to erection of large exhibition hall and conference hall on site of blitzed Customs House.

Llandudno.—T.C. applied to Welsh Board of Health for approval to building 100 houses in 1949.

Macclesfield.—Ches. E.C. approved 3 day nur series at £21,800.

Manchester.—T.C. approved additions to works, Raby-st. and Sewerby-st., Moss Side, for Sorensen Bakery, Ltd., Drake-st., Hulme; club premises, cricket ground, Slade-la., Levenshulme, for Building cttee. of Levenshulme L.T. and C.C. (E. W. Jones, architect, 5, Astor-rd., Levershulme); four-storey extension to works at 399, Oldham-rd., Newton Heath, for Watts & Corry, Ltd. (H. Elder (L.), 66, Manchester-rd., Wilmslow, Ches.).

Manchester.—T.C. approved:—Rebuilding part of Little Green Dyeworks, Collyhurst-rd., Collyhurst, for J. Walton, Ltd. (E. W. Jones, architect, 5, Astor-rd., Levenshulme); works canteen, Matthew-st. and Wigley-st., Ardwick, for Anglo-American Oil Co., Ltd., 26, Queen Anne's-gate, S.W.1; additions to Thistle Mill, Factory-la., for M. Bottomley & Sons, Ltd.

Manchester.—T.C. to acquire sites at Rochdale-rd., Collyhurst, and Lind-st., Beswick, for temp. housing.

Manchester.—City C. approved, in principle, rebuilding scheme for Free Trade Hall. City A., L. C. Howitt.

Morpeth.—R.D.C. to build 40 houses at Longhorsley. Plans by J. Coates, surveyor, Dacre House.

Newcastle.—Alterations to premises at Newtons, Ltd., Westgate-rd., Newcastle. Architect, C. Solomon, 3, St. Mary's-pl.

Newcastle (Staffs).—T.C. approved 28 houses, Talke-rd. for F. E. Smith. A. Cotton & Sons, architects, Piccadilly, Tunstall, Stoke-on-Trent.

Northumberland.—E.C.'s 1949 school building programme includes 5 in Longbenton area, 2 at Blyth, and 1 each at Bebside, Wooler, Monkseaton, Shiremoor, Wallsend, Hexham, Ponteland, Newburn and Haltwhistle. Plans by C.A., County Hall, Newcastle-on-Tyne.

Nottingham.—City C. approved erection of 344 houses and 5 shops at Bilborough and expenditure of £12,000 on Radford baths.

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Oldham.—E.C. propose 7 comprehensive schs. at £2,700,000.—E.C. propose town university and 2 county colleges. J. W. Hitching, schs. architect, Education Offices, Union-st. West.

Peterborough.—E.C. propose tech. coll. D. C. H. Jenkin, B.Arch. (A.), The Polytechnic, Regent-st., W.1.

Preston.—Lancs E.C. propose girls' grammar sch. at Cop-la., Penwortham. G. Noel Hill (F.), County Offices, Fishergate-hill, Preston.—Rev. J. Stones, rector, and managers of Bretherton C.E. school propose additions to sch. bldgs. at £9,000.

Rainford.—U.D.C. to erect 90 houses at Bankvillas site.

Rochester.—City C. to apply for permission to build 150 council houses.

Rotherham.—T.C. approved:—38 houses at Keppels estate, Upper Wortley-rd., J. V. Dowling, builder, 27, St. Anne's-rd.; 28 houses, Spinneyfield, G. Bilton & Sons, builders, 31, Barrowby-rd.—West Riding E.C. propose extensions to Maltby grammar sch.

Salford.—T.C. approved:—Clothing factory, 194, Great Clowes-st., Broughton, for Louis Mehr; warehouse, Lambs Court, for Brierley Bros.—E.C. propose prim. sch. at Summerville-rd., Pendleton; day nurseries at Hayfield-ter., Pendleton, and Bradshaw-st., Broughton; sch. canteen at St. Joseph's R.C. sch., Tamworth-st. and West Craven-st.; extensions to Royal tech. coll., Peel Park, The Crescent.

Scunthorpe.—T.C. receiving allocation of 350 houses from M.H. in 1949.

Southport.—T.C. seeking permission from M.H. to erect 110 houses at Heathfield-rd., Granthamrd. and Balmoral-dr.

South Shields.—T.C. to acquire site at Oceanrd. for civic restaurant. Plans by B.S., J. Reid.

South Shields.—Minister of Transport to receive details of £26,000 bus station.

Stafford.—Staffs C.C. propose:—Residential nursery and nursery training sch. at "Rotherwood," Rowley Park, at £43,000; adapting Pool Dam Mill, Newcastle-under-Lyme, for special sch.

Stockport.—T.C. approved 18 houses, Dial Park-rd., T. Fryer & Co., Ltd., builders, Gardenst., Great Moor.—T.C.'s building programme for 1949 includes prim. sch. at Bridge Hall estate, completion of prim. sch., Broadstone Hall, and new prim. sch. at Houldsworth estate, Reddish. L. Yates (L.), Education Offices, Town Hall.

Stockton.—Co-op. Society to build dairy and ice-cream factory at Church-rd. at £125,000.

Stockton-on-Tees.—M.H. approved T.C.'s plans for erection of houses east of Durham-rd. and north of Darlington-la.—M.E. suggested E.C.'s 1949 programme should include completion of Stockton sec. sch. and construction of workshop block at Stockton tech. coll.—Sketch plans by Boro' A. for erection of dining-rooms at Oxbridge-la. sch. forwarded to M.E. for approval.—F. W. Turnbull, White House, Carlton, prepared plans for three pairs of houses at Bishopton-rd.

Stone.—Staffs C.C. propose 12 houses for fire brigade personnel at £24,000. Lotus, Ltd., propose canteen, hall and sun lounge at new factory at Longton-rd.

Sunderland.—T.C. propose sports stadium at Fulwell Mill. B.S., J. Lewis, to prepare plans.

Sunderland.—Miners' Welfare Commission to convert Herrington Hall, nr. Sunderland, into a rehabilitation centre. Plans by Commission, Saville-row, Newcastle.

Sunderland.—M.E. approved T.C.'s plans for 5 schs. during 1949 at £500,000.

Tynemouth.—T.C. proposes 14 shops at West Chirton estate and 8 at Broadway estate.

Wallasey.—E.C. propose infants' and junior schs. at Mills-la., Poulton. R. F. B. Grundy, B.Sc., B.E., Town Hall.

Warrington.—T.C. approved factory, Stationrd., for Warrington Timber Co., Ltd.

Wellington.—Shrops. E.C. propose infants' sch. at Hadley. A. Guy Chant (F.), 5, Belmont, Shrewsbury.

West Hartlepool.—Kitching & Co., 21, Albertrd., Middlesbrough, are architects for erection of canteen and office at Greatham-st. for Expanded Metal Co., Ltd.

Wigan.—Catholic Authorities propose Springfield sec. sch.

Wolstanton.—British Legion branch building cttee. propose headquarters at approved site.

Worcestershire.—City C. requesting M.H. to approve a start on the following projects next year:—Infants' sch. at Norton estate, Stourbridge; infants' dept. of prim. sch., Felton-la., Halesowen; infants' and jun. prm. sch., Broadwaters, Kidderminster; prim. sch. at Langley, Oldbury; sec. mod. sch. at Stourport-on-Severn; sec. mod. sch. at Evesham; sec. mod. sch. at Droitwich; sec. mod. sch. at Tenbury; provision for tech. education at Oldbury; college for further education at Kidderminster; development of "Avonbank" as horticultural institute; development of Rhydd Court as special sch.

Wrexham.—T.C. to build 244 houses in 1949.

Yarmouth.—T.C. to make compulsory purchase order for 50 acres in centre of town with certain exclusions. Cost of acquisition, £1,200,000.—T.C. considering estimate of £250,000 for acquiring land, rebuilding, site clearance and roads in 1949-50.

TENDERS

* Denotes *accepted*.
† Denotes *provisionally accepted*.
‡ Denotes *recommended for acceptance*.
§ Denotes *accepted subject to modification*.
¶ Denotes *accepted by H.M. Government departments*.

Battersea.—Works for B.C. 21 flats at St. John's Hill, 17 flats at Nightingale-la., Hendrick-av., and 20 flats at Westbridge-rd.: *H. T. Jones & Co., 6, Griffiths-rd., Wimbledon, S.W.19, £36,079, £36,049 and £35,942 (subject to necessary consents).

Bedworth.—Six houses at Black Horse-rd., for U.D.C. D. Blenkinsop, A.M.I.Mun.E., E. & S.: *C. J. Royce & Co., Ltd., 1, Saunders-av., Bedworth, £7,410.

Belfast.—Houses for Corporation. 60 Orlit at Highfield estate: *J. M. Reilly, Ltd.; 50 Trusteel at Grand Parade and Connsbrook-av.: *Thomas Mayne, £1,652 per house.

Brigg.—20 houses at Goxhill, Hilbaldshaw and Kirton Lindsay, for R.D.C.: *F. R. Hepworth & Son, Goxhill, Barrow-on-Humber, Lincs (6); *Gilding & Hill, 23, West-st., Winterton, Doncaster (6); *Lonsdale & Hubbard, 20, Buckingham-av., Scunthorpe (8).

Burnley.—Factory at Harling-st. and White-st., Rose Grove, for Harling & Todd. G. & S. Keighley, architects, 27, Nicholas-st.: *Mullen & Dirkin, Ltd., 146, Trafalgar-st., Burnley.

Cookham.—Eight houses at rear of The Bull Inn, Bisham. James H. Beevis, M.Inst.R.A., architect & S.: *H. L. Jameson & Sons, 60, Station-rd., Marlow, Bucks, £10,490.

Cuckfield.—16 dwellings at Sayers Common, for R.D.C. A. Hutchings, M.I.Mun.E., E. & S.: *W. C. Hilton, 137, Western-rd., Haywards Heath, £19,403 (subject to M.H. approval).

Cumberland.—Four houses at Keswick and Penrith, for C.C.: *Messrs. Reay, Penrith.

Darlington.—36 flats at Nickstream-la. site, for T.C. E. A. Tornbohm, Boro' A., Central-bldgs.: *Bussey & Armstrong, Brinkburn-rd., Darlington.

Folkestone.—36 houses, contract "C," at Horn-st., for T.C. E. L. Allman, A.M.I.C.E., A.M.I.Mech.E., B.E. Quantities by Drower & Son: *S. A. Rye, Ltd., York-mews, Shaftesbury-av., Folkestone, £45,419.

Folkestone.—10 houses at Rossendale-rd. site, contract No. 1, for T.C. E. L. Allman, A.M.I.C.E., A.M.I.Mech.E., B.E. Quantities by Drower & Son: *S. A. Rye, Ltd., York-mews, Shaftesbury-av., Folkestone, £12,839.

Friern Barnet.—30 flats at Colney Hatch-la., for U.D.C.: *Graham, Builders & Contractors, Ltd., £44,493.

Harpenden.—19 houses at Batford estate, for U.D.C. J. H. Leach, architect. H. E. Stopher, E. & S.: *H. & H. E. Sanders, Cavendish-rd., Markyate, £6,560 (5); *E. C. & F. H. Jarvis, Ltd., Vaughan-rd., Harpenden, £10,050 (7); *Roberts & Hough, 85, Station-rd., Harpenden, £10,050 (7).

Hebburn-on-Tyne.—Additions to H.2 gear shop and the No. 2 boiler shop at works of Reyrolle & Co., Ltd. Architects, Cackett, Burns Dick and McKellar, 21, Ellison-pl., Newcastle-on-Tyne: *A. Anderson (Contractors), Ltd., Stanmore-rd., Newcastle-on-Tyne.

Heston and Isleworth.—48 houses and 32 maisonettes at Hounslow West Estate, Section A, for T.C.: *Building & Public Works Co., Ltd., £109,323.

Kingsbridge.—Three pair blocks of houses at Thurlestone, for R.D.C. H. Parsons, architect, Council Offices, Manor House: *Lannarth Builders, Ltd., Hannaford's Court, Ashburton, £7,996 (subject to M.H. approval).

Kirkby-in-Ashfield.—16 houses and incidental works at Greenwood-dr. and Skegby-rd. estates, for U.D.C. B. W. Bostock, F.I.A.A.S., M.Inst. R.A., E.S. & Housing A.: *F. T. Fowler, Southwell-rd., Mansfield, £2,566 (per pair).

Lambeth.—Three blocks of flats with laundry and clubroom, two blocks of flats for aged persons and 6 pairs of houses at Knight's Hill, site No. 15: *Wates, South-Western Estates, Ltd., £155,628.

L.C.C.—Four-storey block of flats at Heaton-rd. site, Camberwell:—

Mitchell Construction Co., Peterborough	£96,450
A. N. Coles (Contractors), Ltd., Paddington	78,990
Kirk & Kirk, Ltd., Wandsworth	78,815
George Wimpey & Co., Ltd., Denham	76,550
Kent & Sussex Contractors, Ltd., Sidcup	74,813
Wm. Shurman & Sons, Ltd., Hackney	74,747
Unit Construction Co., Ltd., Westminster	74,440
Harry Neal, Ltd., St. Marylebone	74,404
Wilson, Lovatt & Sons, Ltd., Westminster	73,700
Marshall, Andrew & Co., Ltd., Westminster	73,470
Unera Construction Co., Ltd., Kensington	72,569
Gough, Cooper & Co., Ltd., Wilmington	71,657
*H. T. Oliver & Sons, Ltd., Lambeth	71,629

Comparable estimate of appointed architects, Lionel H. Fewster & Partners, is £72,697.

Construction of one three-storey and two four-storey blocks of flats, with balcony access, laundry, two tenants' workrooms and 30 perambulator sheds at Stoneham-rd. site, Hackney, as extension of Northwold estate:—

Rice & Son, Ltd., Lambeth	£117,853
James Carmichael (Contractors), Ltd., Wandsworth	116,775
John Knox (Bristol), Ltd., Bristol	115,481
Sloggetts (Contractors), Ltd., Kensington	112,196
Richard Costain, Ltd., Westminster	111,862
Stewart & Partners, Ltd., St. Marylebone	111,817
Perrys (Ealing), Ltd., Ealing	108,220
Kirk & Kirk, Ltd., Wandsworth	108,076
Unit Construction Co., Ltd., Westminster	107,397
Wates South-Western Estates, Ltd., Norbury	105,898
A. E. Symes, Ltd., Poplar	104,451
Wilson Lovatt & Sons, Ltd., Westminster	101,750
F. Troy & Co., Ltd., Southwark	98,990
*E. A. Russell, Ltd., Walthamstow	93,733

Comparable estimate of appointed architects, Val Myer, Hart & Willis, is £103,545.

¶London (Admiralty).—*St. Merryn*, R.N.A.S., 24 Cornish Unit houses, Selleck Nicholls & Co., Ltd., East Hill, St. Austell, Cornwall. *Lossiemouth*, R.N.A.S., 50 Orlit houses, The Scottish Orlit Co., Ltd., 79, George-st., Edinburgh 2. *Lee-on-Solent*, R.N.A.S., Painting married quarters, Jno. Croad, Ltd., 98, High-st., Gosport, Hants.

¶London (Air Ministry).—Contracts to value of £500 or over for week ended November 27:—Conversion of huts, etc.: Kerridge (Cambridge), Ltd., Cambridge. Building work: W. Turner (Builders), Ltd., London, S.W.14; Y. J. Lovell & Son, Ltd., Gerrards Cross, Bucks. Civil engineering work: Higgs & Hill, Ltd., London, S.W.8. Painting work: J. & B. Abbott (Contractors), Ltd., Harrow; Spraycraft Co., Ltd., Bromley, Kent; Sinclairs Steel Erectors, Ltd., Manchester 16. Maintenance of tower and masts: Tasker & Booth, Ltd., London, N.16; G. M. Carter (Erectors), Ltd., Waddon, Surrey; Wm. Harbrow, Ltd., London, S.E.16; Tees Side Bridge and Engineering Works, Ltd., Middlesbrough, Yorks. General maintenance work: Robison & Davidson, Ltd., St. Catherine's-gate, Dumfries. Erection of hutting: G. H. Miller & Co., Ltd., London, E.7.

¶London (M.O.W.).—Contracts placed by M.O.W. during week ended November 20:—*Beds*: V.P. School, Barton-in-the-Clay. Additional classrooms, Building Contractors (Luton), Ltd., Church-st., Luton. *Cambs*: P.O.W. Camp, Trumpington, Adaptations and repairs, Johnson & Bailey, Ltd., Norfolk-st., Cambridge. *Ches*: Rudheath Sec. School, Northwich, Hutted accommodation, Harry Fairclough, Ltd., Howley, Warrington, Lancs. *Cornwall*: County Prim. School, Goonhaven, Temp. school buildings, Bellington Bros., Ltd., 28, Fore-st., Newquay, Cornwall. *Dumfriesshire*: Sanquhar Academy, Dumfries, Dining-room and scullery, G. Wimpey & Co., Ltd., 37, Drumsheugh-gdns., Edinburgh. *Glam*: Junior School, Llanrhidian, School kitchen and dining-room, T. A. Ace & Son, Elmsdale, Murton Bishopston, Swansea; James-st, School, Pontardulais, School kitchen and dining-room, Thos. Richardson (Swansea), Ltd., Northampton-la., Swansea. *Hampshire*: Police Wireless Station, Hannington, Staff quarters, Wm. Bell & Sons (Andover), Ltd., 4-6, Belle Vue-rd., Andover, Hants; Senior School, Romsey, School dining accommodation, Geo. S. Hallam & Sons, 9, Carlton-cres., Southampton. *Lancs*: Durnford-st. School, Middleton, School kitchen and dining-room, G. & J. Seddon, Ltd., 3, Manchester-rd, West, Little Hulton, Bolton, Lancs. *Leics*: Stoneygate Telephone Exchange, Extension, Wm. Moss & Sons, Ltd., Queen's-rd., Loughborough. *Lincs*: Asst. Board Hostel, Ludford Magna, Adaptations, Ellis Thompson & Co., Ltd., James-st., Louth, Lincs. *Midlothian*: G.P.O., Edinburgh, Internal decorations, T. C. Watson, 125, Gilmore-pl., Edinburgh. *Stirlingshire*: Riverside School, Stirling, Temporary classrooms, G. Wimpey & Co., Ltd., 37, Drumsheugh-gdns., Edinburgh.

¶London (War Dept.).—Works contracts placed by War Dept. for week ended November 20:—

Co. Durham: Painting work, T. Metcalfe & Sons, Ltd., Darlington. *Salop*: Painting work, Geo. Jones & Son (Contractors), Ltd., Liverpool 6. *Essex*: Miscellaneous work, Warriner (Builders), Ltd., Romford. *Middx*: Building work, R. E. Spooner, Ltd., Ashford Common. *Hants*: Roofing work, W. A. Fussell, Southampton.

Manchester.—Construction of Garden of Remembrance, St. Peter's-sq., for War Memorial Committee. L. C. Howitt (F.), City A., Town Hall. General contractors: *Robert Carlyle & Co., Ltd., Elsinore-rd., Old Trafford, Manchester 16, £5,000. Masonry: *The Bath and Portland Stone Firms, Ltd., Bath, and *The Staincliffe (Darley Dale) Stone Co., Ltd., Darley Dale, Matlock, Derbys.

Manchester.—Rebuilding front elevation and gable of Victoria Hotel, City-rd., Hulme, for Walker & Homfrays, Ltd., Woodside Brewery, Eccles New-rd., Salford 5. C. E. Bracken (L.), Brewery Offices: *Thos. W. Evans (Builders), Ltd., 3, Spring-gdns., Didsbury, Manchester 20.

Manchester.—Laundry buildings at Manchester-rd. and Albany-rd., Chorlton-cum-Hardy, for White Star Laundry Co., Ltd. Matley Brotherton & Mills, architects, 39, Oxford-st.: *Alfred Hodkinson, Ltd., 62, Greenhill-st., Greenheys, Manchester 15.

Manchester.—Works for T.C. 114 flats at Baguley Hall: *Direct Labour; seven shops, 12 flats and six garages at Thornton-st., Collyhurst: *Direct Labour; 120 flats at Newall Green: *Moston Brick & Building Co., Ltd., Manchester; 71 houses at Woodhouse Park and Moss Nook: *A. Locke (1940), Ltd., Davyhulme; 85 houses at Woodhouse Park and Moss Nook: *T. Costello, Ltd., Heaton Moor (all subject to M.H. approval).

Middlesbrough. — Houses at Emerson-av. Architects, Kitching & Co., 21, Albert-rd., Middlesbrough: *J. H. Proudlock, Simpson-st., Middlesbrough.

Newcastle, Staffs.—32 maisonettes at Meadow-la., Cross Heath, and Machin-cres., Bradwell estate, for T.C. C. B. Parkes (L.), Estate Office, Bournville Trust, King's Norton, Birmingham 30: *William Brammer & Co., Ltd., Longfield-rd., Hartshill, Stoke-on-Trent, £19,969 (24); *Madew & Wardle, Ltd., Central Works, Market-la., Newcastle-under-Lyme, Staffs, £6,672 (8).

Portland.—16 old people's houses at Pound Piece, Weston, for U.D.C. Crickmay & Sons (F.), 23, St. Thomas-st., Weymouth. Quantities by C. Sweett, F.R.I.C.S.: *Childs Bros., 71, High-st., Portland.

Scottish Special Housing Association.—Contracts placed from October 16 to November 9:—

(i) *Site Servicing.*

Douglas, Rigside, Lanark (52 Traditional), County Road S., Hamilton, Surfacing of roads and footpaths. West Kilbride-rd., Dalry (150 Swedish Timber), Hay & Anderson, Broomhill Farm, Kilwinning, Fencing (part of site only). Muirhouse, Motherwell (176 Swedish Timber), A. Smith, 52, Baron-rd., Motherwell, Cutting hedges.

(ii) *House Erection.*

Mayfield, Saltcoats (22 Traditional), Durastic, Ltd., 257, W. George-st., Glasgow, Floor finish. Thornhouse-av., Irvine (28 Traditional), Durastic, Ltd., 257, W. George-st., Glasgow, Floor finish. Pinkie Mains, Musselburgh (30 Cruden), Crudens, Ltd., Olive Bank, Musselburgh, All trades. Woodmill, Dunfermline (40 Cruden), Crudens, Ltd., Olive Bank, Musselburgh, All trades. Rowallan-dr., Kilmarnock (four Traditional), Semtex, Ltd., 53, Kelvin-av., Hillington, Glasgow, Floor finish. Park-rd. South, Bishopbriggs (two Traditional), Semtex, Ltd.,

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53, Kelvin-av., Hillington, Glasgow, Floor finish. Carskeoch, Patna (24 Traditional), Alex Dunn, Ltd., Uddingston, Tiled kerbs and hearths. Dalmellington, Ayrshire (12 Traditional), Alex Dunn, Ltd., Uddingston, Tiled kerbs and hearths. Dalneigh, Inverness (18 Traditional), Duncan Logan, Ltd., Dingwall, Tiled fireplaces. Rowallan-dr., Kilmarnock (8 Traditional), Kilmarnock Gas Dept., Kilmarnock, Gas services. Forth, Lanarkshire (52 Traditional), James Strang & Sons, 48, Bellevue, Polmont, Fencing and hedging. Comrie, Fifeshire (68 Traditional), P. Laing & Son, Crossford, Dunfermline, Privet hedging. Kennoway, Fifeshire (60 Traditional), Robert Terras, Jr., East Wemyss, Fifeshire, Privet hedging. Newtown, Bo'ness (32 Traditional), James Strang & Sons, Polmont, Fencing and privet hedging. Manse-av., Whitburn (48 Traditional), James Strang & Sons, Polmont, Privet hedging. Falside, Bathgate (76 traditional), Park & Thomson, Croft-st., Dalkeith, Screeding on ground floors of 47 houses. Sauchenbush, Kirkcaldy (48 Weir), Weir Housing Corporation, All trades. Dysart, Fifeshire (40 Weir), Weir Housing Corporation, All trades.

Work undertaken by Direct Labour Organisation.

(i) *Site Servicing.*

Lomond-rd., Balloch (10 Traditional), S.S.H.A., Ltd., Road and sewer.

Scunthorpe.—30 houses for T.C. S. Cyril Cooper, A.M.Inst.C.E., B.S.: *H. Boot & Sons, Ltd., Banner Cross Hall, Ecclesall-rd., Sheffield (26); *E. Fish & Son, 33, Maple Tree-way, Scunthorpe (4).

Scunthorpe.—188 houses, for T.C.: *Spooners (Hull), Ltd., £232,403.

South Shields.—Renewal of King-st. railway bridge, for British Railways: *Wright, Anderson & Co., Ltd., Gateshead.

South Shields.—Six shops and flats, for T.C. Lt.-Col. John Reid, B.E.: *R. Brown & Son, Lord-st., South Shields, £12,681.

South Shields.—62 houses for T.C. Lt.-Col. John Reid, B.E.: *J. Prentice, Sunderland, £76,096.

Stockport.—Completion of Infants' School, Bridge Hall housing estate, for T.C. L. Yates (L.), School Architect, Education Offices, Town Hall: *J. Gerrard & Sons, Ltd., Pendlebury-rd., Swinton, Manchester. Heating: *J. H. Hicks & Co., Ltd., 2, Millgate, Stockport. Electrician: *William Townson & Sons, Ltd., Park Hill-st., Bolton.

Stockport.—40 houses with roads and sewers at Bosworth-gr., Reddish, for T.C. W. F. Gardner, M.I.C.E., B.S.: *Emlyn Jones, Priory-la., Reddish, Stockport, £40,241 and £3,401.

Stretford.—Reconstruction of railway bridge, for British Railways Executive (London-Midland Region). W. E. Marrian, district engineer, 20, Mount-st., Manchester 2: *Thomas Wrigley, Ltd., 290, Corn Exchange-bldgs., Fennel-st., Manchester 4.

Tipton.—82 Traditional houses, for T.C. Horace L. Woodard, B.S.: *Ashbarham (Builders), Ltd., West Bromwich, £93,355.

Warrington.—Two houses at Chester-rd., two pairs at Rydal-av., and three pairs at Hallows-av.: *W. Beswick, Chester-rd., Warrington (6); *Tomlinson & Norbury, Orford, Warrington (6).

Wimborne.—16 houses at Leigh Park estate, for U.D.C.: *E. W. Kingsbury & Son, £22,214.

Wood Green.—Nine flats at Truro-rd. site, for B.C.: *A. E. Lewis & Son, £16,338 (subject to M.H. approval).

Woolwich.—Houses at Coldharbour estate, for B.C.: 12 traditional, *J. A. Proctor, Ltd., Plumstead, £18,819; 94 "Easiform," *John Laing & Son, Ltd., Mill Hill, £131,760.

Worksop.—Houses, for R.D.C.: 34 traditional at Long-la., Carlton, *Dernie & Bell, Worksop, £52,884; 20 Airey at Carlton, *John Holmes, Ltd., Doncaster, £23,260 (both subject to M.H. approval).

CORRECTION.

Wallasey.—Messrs. J. Boyd & Sons, Ltd., timber importers and merchants, builders' merchants and ironmongers, of 60, Claughton-rd., Birkenhead, inform us that they are not the contractors for the erection of eight houses as stated in our issue of November 26.

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